FURUNO

SERVICE MANUAL

MARINE VHF RADIOPHONE

MODEL FM-3000

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

INTRODUCTION

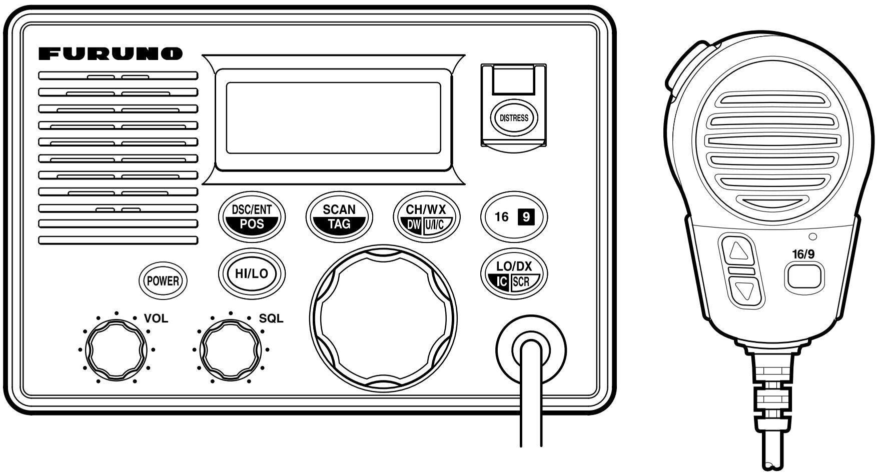
This service manual describes about FM-3000 MARINE VHF RADIOTELEPHONE technically.

CAUTION

NEVER connect the transceiver to an AC outlet or to a DC power supply 16 V or more. This will damage the transceiver.

DO NOT connect the power supply in reverse polarity.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the receiver's front end.



PARTS ORDER

When placing an order, please include following information.

1) 10-digit order numbers
2) Part number and name
3) Model name and unit name
4) Quantity required

<EXAMPLE>

1130007610	S.IC	µPD3140GS	FM-3000	MAIN BOARD	5 pieces
8820001210	Plate	2345 A-Module plate	FM-3000	CHASSIS	10 pieces

NOTES

1) Disconnect the power source before opening the transceiver.
2) Use an insulated tuning tool for all adjustments.
3) **DO NOT** keep power ON for a long time when the transceiver is defective.
4) **DO NOT** transmit power with a signal generator or a sweep generator connected to ANT connector.
5) **ALWAYS** connect a 40 dB to 50 dB attenuator between the transceiver and a deviation meter or spectrum analyzer.
6) **READ** the instruction thoroughly before connecting equipment to the transceiver.

TABLE OF CONTENTS

1 SPECIFICATIONS

GENERAL

• Frequency coverage	: 156.025–157.425 MHz (Tx) 156.050–163.275 MHz (Rx)
• Mode	: 16K0G3E (FM) 16K0G2B (DSC)
• Usable channels	: All international and USA channels
• Power supply requirement	: 13.8 V DC (negative ground)
• Usable temperature range	: –20˚C to +60˚C (–4 ˚F to +140˚F)
• Frequency stability	: ±10 ppm (–20˚C to +60˚C; –4 ˚F to +140˚F)
• Current drain (at 13.8 V DC)	: Transmit at 25 W 5.5 A Receive max. audio 1.5 A
• Antenna connector	: SO-239 (50 Ω)
• Dimensions (projections not included)	: 165(W)×110(H)×103(D) mm $6\frac{1}{2}$(W) × $4\frac{11}{32}$(H) × $4\frac{1}{16}$(D) in
• Weight (Including FM-3001)	: Approximately 1130 g (2 lb 8 oz)

TRANSMITTER

• Output power (at 13.8 V DC)	: High 25 W Low 1 W
• Modulation	: Variable reactance frequency modulation
• Maximum frequency deviation	: ±5.0 kHz
• Frequency error	: +10 ppm
• Spurious emissions	: 70 dBc
• Residual modulation	: 40 dB
• Audio harmonic distortion	: Less than 10% at 60% deviation
• Audio frequency response	: +1 dB to –3 dB of 6 dB octave from 300 Hz to 2500 Hz
• Microphone impedance	: 2 kΩ

RECEIVER

• Receive system	: Double conversion superheterodyne system
• Intermediate frequencies	: 1st 21.7 MHz 2nd 450 kHz
• Sensitivity	: 0.22 μV (–120 dBm) at 12 dB SINAD
• Squelch sensitivity	: 0.22 μV at threshold
• Adjacent channel selectivity	: 75 dB
• Spurious response	: 75 dB
• Intermodulation rejection ratio	: 75 dB
• Hum and noise	: 40 dB
• Audio output power (at 13.8 V DC)	: 4.5 W typical at 10% distortion with an 4 Ω load
• Audio frequency response	: +1 dB to –3 dB of –6 dB octave from 300 Hz to 3000 Hz

Specifications are measured in accordance with TIA/EIA-603

All specifications are subject to change without notice or obligation.

2 CIRCUIT DESCRIPTION

2-1 RECEIVER

1) ANTENNA SWITCHING CIRCUIT

The antenna switching circuit acts as a low-pass filter while receiving and as resonator while transmitting. The circuit does not allow transmitted signal to input receiver circuit.

Received signal inputs the MAIN board from the antenna connector and passes through the low-pass filter (L21, L22, C1, C127, and C130). The signal is then applied to the RF circuit via the antenna switching circuit (D22, D23, R124, and R144).

2) RF CIRCUIT

The RF circuit amplifies the signal of coverage frequency and filters out-of-band signals.

The signal from the antenna switching circuit passes through a tunable bandpass filter (D25, L35, and C149–C152) where the desired signal is led to the RF amplifier circuit (Q21).

The signal amplified by Q21 is applied to the another tunable bandpass filter (D26–D31, L36–L39, C161, C162, C164, C165, C173–C178, and C182) to suppress unwanted signals and improve the selectivity. The signal is then applied to the 1st mixer circuit.

D25–D31 are varactor diodes, that are controlled by the PLL lock voltage to set the band pass filters.

3) 1ST MIXER AND 1ST IF AMPLIFIER

The signal from the RF circuit is mixed with the VCO signal at 1st mixer circuit (Q22) to produce 21.7 MHz 1st IF signal.

The 1st IF signal is applied to a pair of crystal filters (FI1 and FI2) to attenuate out-of-band signals, and then amplified by the IF amplifier (Q23). The amplified signal is applied to 2nd mixer circuit (IC5).

4) 2ND IF AMPLIFIER AND DEMODULATOR

The 2nd mixer circuit converts 1st IF signal into 2nd IF signal. A double superheterodyne system (which converts received signal twice) improves the image rejection ratio and obtains stable receiver gain.

The FM IF IC (IC5) contains 2nd local oscillator, 2nd mixer, limiter amplifier, quadrature detector, and noise detector circuits.

The 1st IF signal from Q23 is applied to 2nd mixer IC5 (pin 16), and mixed with 21.25 MHz 2nd LO signal generated by the PLL circuit to produce 450 kHz 2nd IF signal.

The 2nd IF signal from IC5 (pin 3) is passed through the ceramic filter (FI3), and then applied to the 2nd IF (limiter) amplifier in IC5 (pin 5). Then the signal is applied to the FM detector in IC5 for demodulation into AF signal.

The FM detector employs a quadrature detection method (linear phase detection) using a ceramic discriminator (X2). The detected signal is applied to the AF circuit from IC5 (pin 9).

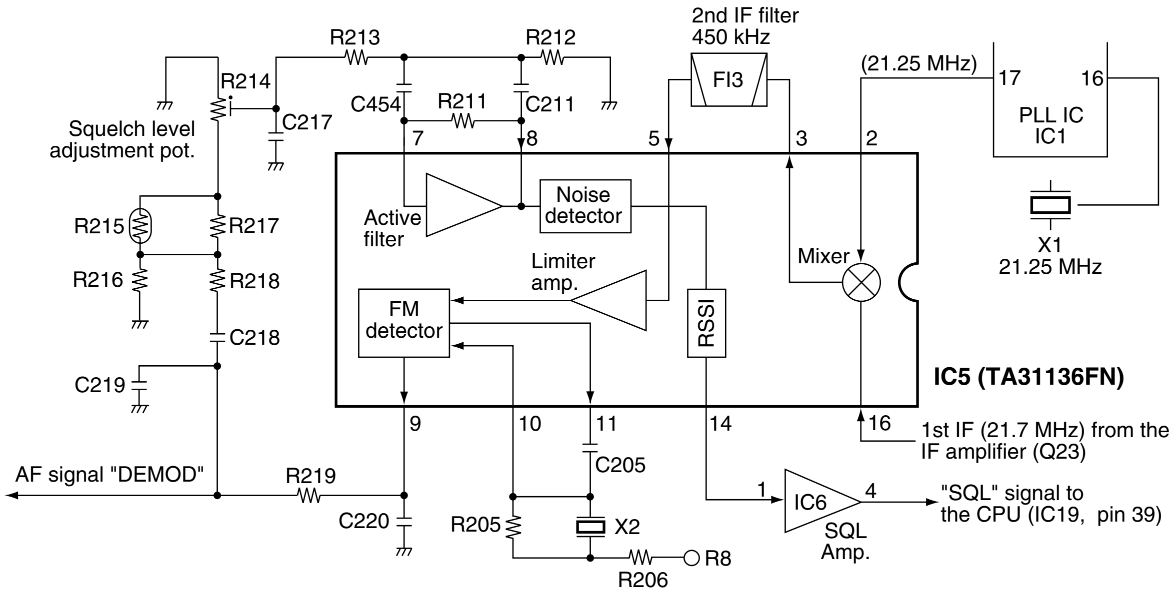


Fig. 2.1 2ND IF AMPLIFIER AND DEMODULATOR

5) AF AMPLIFIER

The AF amplifier circuit amplifies the detected signal to drive a speaker. The AF circuit includes an AF mute circuit for squelching.

AF signal from IC5 (pin 9) passes through the analog switch (IC16, pins 10 and 11), and are applied to the de-emphasis circuit (R291 and C291). The de-emphasis circuit is an integrated circuit with frequency characteristic of –6 dB/octave.

The integrated signal is applied to the active filters (Q35 and Q36). Q35 functions as a high-pass filter to suppress unwanted noise signals of lower band and Q36 functions as a low-pass filter to suppress noise signals of higher band.

The filtered signal passes through the [VOLUME] control on the VOL board, and are then applied to the AF power amplifier (IC14, pin 1). The output signal from IC14 (pin 4) drives the internal (external) speaker.

6) SQUELCH

A squelch circuit cuts AF signal line when no RF signal is received. By detecting noise components in the AF signals, the squelch circuit switches on the AF mute switch.

A portion of the AF signal from the FM IF IC (IC5, pin 9) passes through the squelch adjustment pot. (R214), and are then applied to the active filter (IC5, pin 8). The active filter amplifies and filters noise components. The filtered signal is applied to the noise detector and output from pin 14. The signal is amplified by the SQL amplifier (IC6) and applied to the CPU (IC19, pin 39) as the “SQL” signal. The CPU analyzes the noise level and outputs the “RMUTM” and “RMUTS” signals to toggle the AF mute switches (Q37 and Q38).

2-2 TRANSMITTER

1) MICROPHONE AMPLIFIER

The microphone amplifier circuit amplifies audio signal from the microphone with +6 dB/octave pre-emphasis to a level needed at the modulation circuit.

The AF signal from the microphone is applied to the microphone amplifier (IC15a, pin 2) via the analog switch (IC13, pins 11 and 10). The pre-emphasis consisting of C367 and R369 is connected to the amplifier.

The amplified signal is applied to the IDC amplifier (IC17a, pin 2) via the analog switch (IC16, pins 9, 8, 4, and 3) and passed through the splatter filter (IC17b) to suppress unwanted 3 kHz or higher signals. The filtered signal is then applied to the modulation circuit.

2) MODULATOR

The modulator modulates the VCO oscillating signal (RF signal) with the microphone audio signal.

The audio signal from the splatter filter (IC17b) passes through the frequency deviation adjustment pot. (R381) and are then applied to the modulator consisting of D1-D3 and TX-VCO (Q4). The reactance of D3 varies.

3) DRIVER

The driver amplifies the VCO signal to a level needed at the power amplifier.

The output from the VCO is buffer-amplified by Q6 and Q7, and is then applied to the Tx/Rx switch (D7 and D8). The transmit signal from the Tx/Rx switch is amplified by the pre-driver (Q10) and YGR amplifier (Q12) to obtain an approximate 50 mW signal level. The amplified signal is then applied to the RF power amplifier (IC3).

4) POWER AMPLIFIER

The power amplifier amplifies the driver signal to an output power level.

IC3 is a power amplifier module where 50mW input is amplified to about 35W. The output from IC3 (pin 4) is applied to the antenna connector through the antenna switching circuit (D14) and the low-pass filter.

5) APC CIRCUIT

The APC circuit stabilizes output power.

The RF output signal from the power amplifier (IC3) is detected by D12 and D13. The detected signal is applied to the APC control circuit (Q13, Q16 and D11) to control the power amplifier’s gate bias voltage (IC3). Thus, the APC circuit maintains a constant output power. The detected signal is also supplied to MAIN CPU (IC19, pin 44) as “TXDET” signal.

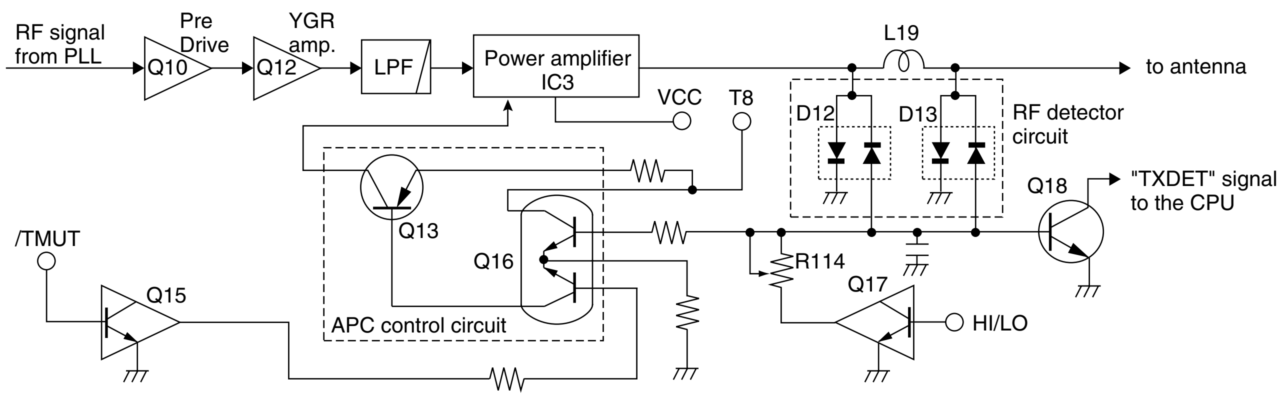


Fig. 2.2 APC CIRCUIT

2-3 PLL CIRCUIT

GENERAL

The PLL circuit provides stable transmit frequency and 1st LO frequency for the receiver. The PLL circuit compares VCO signal to the reference signal in phase. The PLL output frequency is controlled by a crystal oscillator and a programmable divider.

IC1 is a dual PLL IC which controls both VCO circuits for Tx and Rx. IC1 contains a prescaler, programmable counter, programmable divider phase detector, and charge pump.

The PLL circuit, one chip PLL IC (IC1) generates the transmit frequency and receiver 1st IF frequency with VCOs. The PLL sets the division ratio, receiving serial data from the CPU. The PLL compares VCO signal with the reference oscillator frequency in phase. The PLL IC outputs signals from pins 8 and 13 to Tx and Rx circuits respectively. X1 outputs the reference frequency (21.25 MHz).

1) TX LOOP

The signal generated by the TX-VCO (Q4 and D1–D3) is input to the PLL IC (IC1, pin 2) and is divided by the programmable divider. Then the signal is applied to the phase detector.

The phase detector compares the input signal with a reference frequency signal, and then outputs the out-of-phase signal (pulse signal) from IC1, pin 8.

The pulse signal is converted into DC voltage (called lock voltage) by the loop filter (L3, C41 and R5), and then applied to varactor diodes (D1–D3) in the TX-VCO to stabilize the oscillation frequency.

2) RX LOOP

The signal generated by the RX-VCO (Q8, D4 and D5) is divided by the programmable divider in the PLL IC (IC1) and is then applied to the phase detector section.

The phase detector compares the input signal with a reference frequency signal, and then outputs the out-of-phase signal (pulse signal) from IC1, pin 13.

The pulse signal is converted into DC voltage (called lock voltage) by the loop filter (L8, R61 and C61), and then applied to varactor diodes (D4 and D5) in the RX-VCO to stabilize the oscillation frequency. The lock voltage from the loop filter is amplified by the buffer-amplifier (Q6) and then applied to the RF circuit.

3) VCO CIRCUIT

The outputs of TX-VCO (Q4) and RX-VCO (Q8) are amplified by the buffer amplifiers (Q6 and Q7), and are then sent to the Tx/Rx switches (D7 and D8). The VCO output is applied to the PLL IC (IC1, pin 2 or pin 19) via the buffer amplifier (Q3) as a feedback signal.

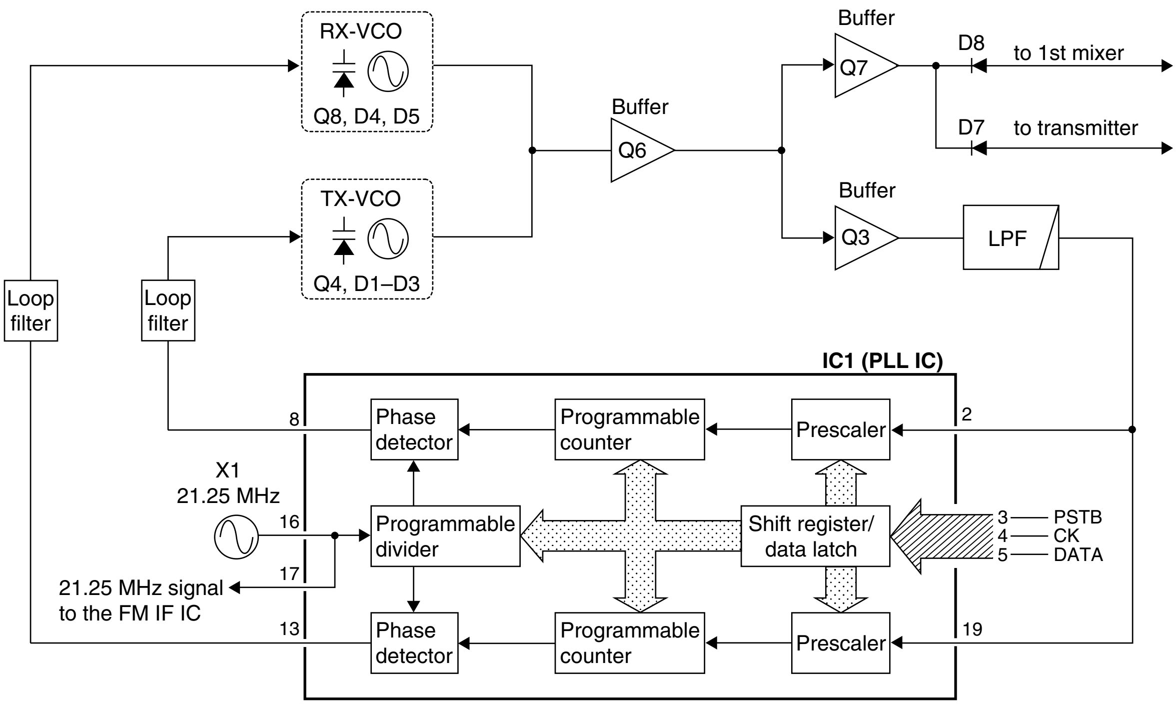


Fig. 2.3 PLL CIRCUIT

2-4 DSC CIRCUITS

1) DSC ENCODER

The DSC signal generated by CPU (IC19, pin 30) is applied to the analog switch (IC16, pin 1, 2) through the buffer amplifier (Q51). The analog switch (IC16) switches between the microphone audio signal and the DSC signal.

2) DSC DECODER

The AF signal from FM IF IC (IC5, pin 9) is filtered by the bandpass filter (IC7) with +18 dB/octave characteristics. IC7b functions as a low-pass filter to suppress unwanted noise signals of higher frequency and IC7a functions as a high-pass filter to eliminate noise signals of lower frequency. The filtered analog signal is converted into digital signal by DSC decoder IC (IC8), and then applied to the CPU (IC19, pin 45) as the “DSDEC” signal after shaping waveform at IC9.

2-5 POWER SUPPLY CIRCUIT

1) LINE VOLTAGES (MAIN BOARD)

LINE	DESCRIPTION
HV	The voltage from DC power supply.
HVS	Same voltage as HV passed through the [PWR] switch (S1 in LOGIC board).
VCC	Same voltage as HVS passed through the power controller (RL1).
8V	8 V generated by the 8V regulator circuit (IC10) from the VCC.
D5V	5 V generated by the +5V regulator circuit (IC12) from the 8V.
T8	TX 8 V generated by T8 control circuit (Q33 and Q34) which receives the SEND signal from CPU.
R8	RX 8 V generated by R8 control circuit (Q21 and Q32) which receives the RCV signal from CPU.

2) LINE VOLTAGES (LOGIC BOARD)

LINE	DESCRIPTION
HV	The voltage from DC power supply. The voltage is supplied from the MAIN board via J4 (pin 14), and is then applied to [PWR] switch (S1).
HVS	Same voltage as HV passed through the [PWR] switch (S1 in LOGIC board). The voltage is applied to the MAIN board via J4 (pin 13).
8V	8 V generated by 8V regulator circuit (IC10 on MAIN board) from the VCC. The voltage is supplied from J4 (pin 9), and is then applied to the dimmer controller circuit (Q2, Q3 and Q8).
D5V	5 V generated by +5V regulator circuit (IC12 on MAIN board) from the 8V. The voltage is supplied to from the J4 (pin 6), and is then applied to the sub CPU (IC1), LCD driver (IC2) and other circuits.

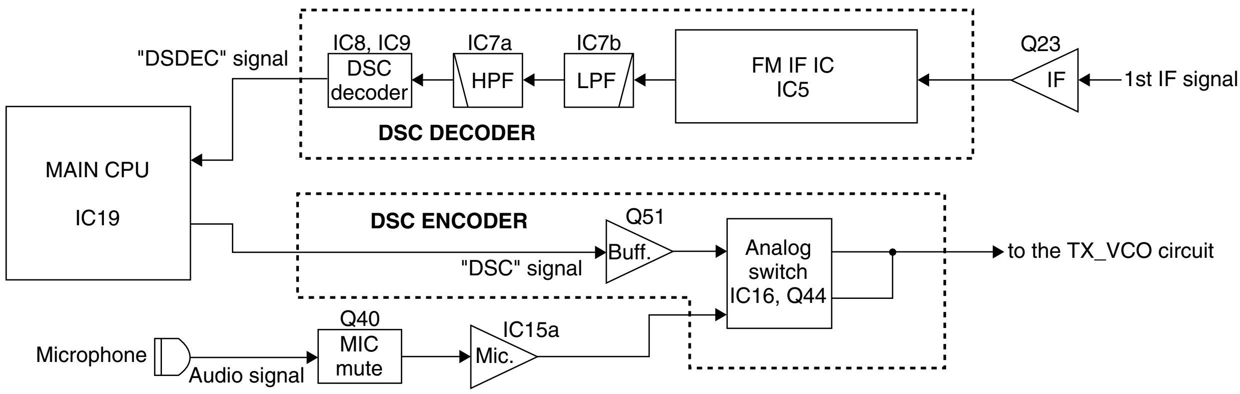


Fig. 2.4 DSC ENCODER AND DECODER CIRCUITS

2-6 LOGIC CIRCUITS

1) LOGIC BOARD

• CPU

IC1 is a 8 bit single chip micro-computer containing LCD driver, serial I/O, timer, A/D converter, programmable I/O, ROM and RAM.

• SYSTEM CLOCK CIRCUIT

X1 generates 4.91 MHz CPU clock.

• LCD DRIVER

IC2 is a LCD driver to control dot matrix on the LCD (DS1).

• DIMMER CIRCUIT

CPU (IC1), Q2, Q3 and Q8 compose a dimmer circuit. The circuit controls the LCD backlight (DS2–DS7) brightness in 8 steps.

• CONTRAST CIRCUIT

CPU (IC1), Q1 and Q4 compose a contrast circuit. The circuit controls LCD contrast in 8 steps.

2-7 PORT ALLOCATIONS

1) SUB CPU (IC1 in LOGIC BOARD)

Pin number	Port name	Description
27, 28, 29, 30	LRESET, E, RW, RS	Output ports for the LCD driver (IC2) control signals.
31–38	DB7–DB0	I/O port for the LCD driver (IC2) control signals.
42	SCAN	Input port for the [SCAN] key.
43	CHWX	Input port for the [CH/WX] key.
44	CH16	Input port for the [16/9] key.
46	SQLV	Input port for the squelch volume level.
47	KEYM	Input port from the microphone (FM-3001) for remote control signal
51, 52	DIALB, DIALA	Input ports for the [CHANNEL].
54	SRXD	Outputs communication data for main CPU (IC16 in MAIN board).
55	STXD	Input port for the communication data from main CPU (IC16 in MAIN board).
58–60	CONTSEG3–CONTSEG1	Output port for the LCD contrast.
61	DTRS	Input port for the [DISTRESS] key.
62	IC	Input port for the [LO/DX] key.
63	DSC	Input port for the [DSC/ENT] key.
64	HL	Input port for the [HI/LO] key.
65, 75–77	DIM4, DIM3–DIM1	Output LCD backlight control signal for the dimmer circuit (Q2, Q3 and Q8).
78–80	CONDOT3–CONDOT1	Output port for the LCD contrast.

2) MAIN CPU (IC16 in MAIN BOARD)

Pin number	Port name	Description
1	STRU	Outputs control signal to the analog switch (IC12) for passing through the optional VOICE SCRAMBLER unit (FM-3030).
2	SCON	Outputs ON/OFF control signal for the optional VOICE SCRAMBLER unit (FM-3030).
3	OPSTB	Outputs strobe signals for the optional VOICE SCRAMBLER unit (FM-3030).
4	PSTB	Outputs strobe signals to PLL IC (IC2, pin 2).
5	CK	Outputs clock signal to PLL IC (IC2, pin 3).
6	DATA	Outputs clock signal to PLL IC (IC2, pin 4).
7	PTTM	Outputs main microphone (FM-3001) select signal to the analog switch (IC10) while intercom operation.
8	PTTS	Outputs optional remote microphone (FM-3010) select signal to the analog switch (IC10) while intercom operation.
10	MMUTE	Outputs select signal for the speaker of main microphone (FM-3001) to the analog switch (IC10) while intercom operation.
11	SMUTE	Outputs select signal for the speaker of optional remote microphone (FM-3010) to the analog switch (IC10) while intercom operation.
12	SP	Outputs ON/OFF control signal for the internal speaker to the AF mute circuit (Q32, D23 and RL2). Low : While internal speaker is ON.
13	HI/LO	Output port for RF output power (High or Low) select signal. Low : While low power is selected.
14	SEND	Outputs the T8 regulator (Q20 and Q21) control signal. Low : While transmitting
15	TMUT	Outputs transmit mute signal. High : While transmitting
16	SRXD	Input port for the communication data from sub CPU (IC1 in LOGIC board).
17	STXD	Outputs communication data for sub CPU (IC1 in LOGIC board).
19	CLRX	Input port for the cloning data from the buffer (D24).

Pin number	Port name	Description
20	CLTX	Output port for the cloning data to the buffer (Q37 in MAIN board).
23	ECK	Outputs clock signal for EEPROM (IC17).
24	EDA	Outputs serial data signal for EEP-ROM (IC17).
27	MICDSC	Outputs select signal to the analog switch (IC12) for the microphone audio signal or DSC signal.
30	DSC	D/A output port for the ATIS/DSC encode signal to the buffer amplifier (Q33).
39	SQL	Input port from the FM IF IC (IC1) for the squelch operation.
42	LBAT	Input port for the connected power supply voltage detection (low battery indicator).
44	TXDET	Input port for the “TX” indicator from the power detector circuit (D14 and D15).
45	DSDEC	Input port for the ATIS/DSC decode signal.
46	UNLK	Input port for the PLL unlock signal. Low : While PLL is locked.
60	PTT	Input port for the PTT switch.
61	HANG	Input port for the microphone hanger detection signal. Low : Microphone on hook
62	OPTIN	Input port for the optional unit connection detection.
66	RCV	Outputs the R8 regulator (Q22 and Q23) control signal. Low : While receiving
67	RMUTM	Outputs the AF mute switch (Q26) control signal for main body. Low : While squelched
68	RMUTS	Outputs the AF mute switch (Q27) control signal for the optional remote microphone (FM-3010). Low : While squelched
69	BEEPM	Outputs beep audio for main body.
71	BPLVM	Outputs beep audio for the optional remote microphone (FM-3010).
75	RESET	Input port for the reset signal.
100	SRESET	Outputs the reset signal for sub CPU (IC1 in LOGIC board).

3 LOCATION OF PARTS

3-1 FM-3000

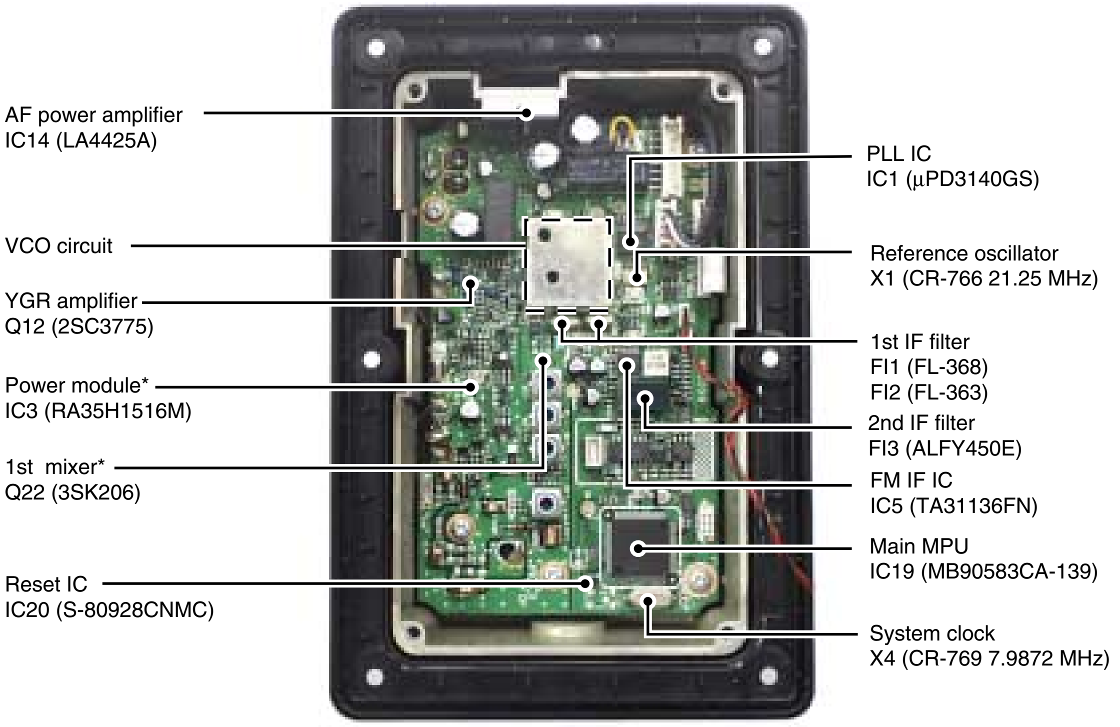


Fig. 3.1 MAIN Board with cover removed

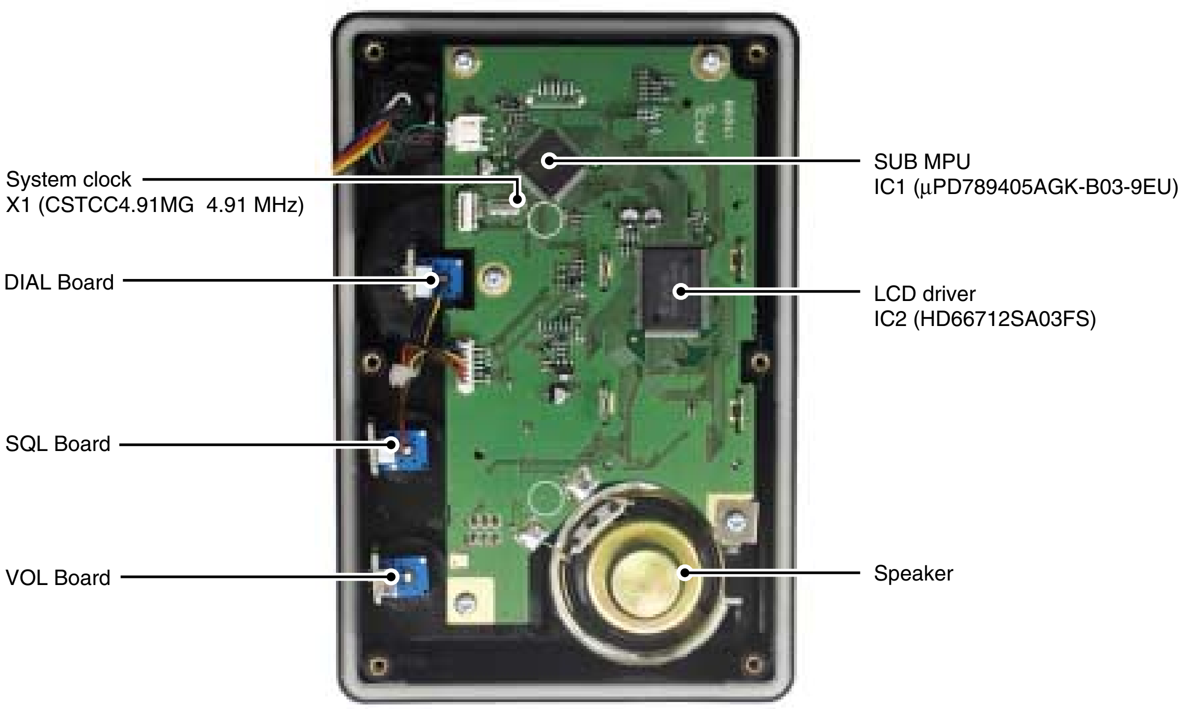


Fig. 3.2 Logic Board

3-2 FM-3010 (OPTIONAL MICROPHONE)

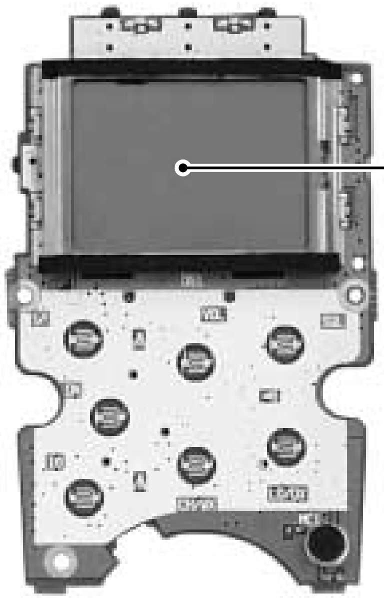


Fig. 3.3 Top view

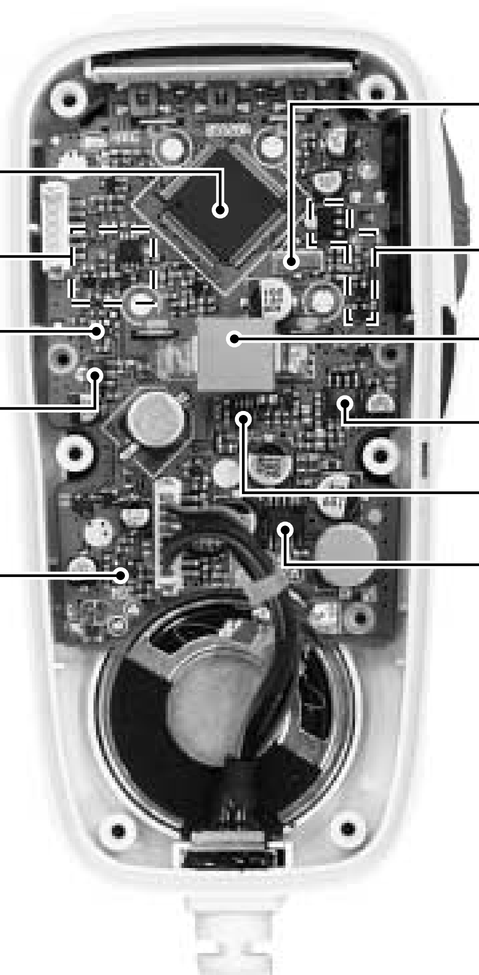


Fig. 3.4 Bottom view

■ VHF MARINE CHANNEL LIST

Channel No.			Frequency (MHz)		Channel No.			Frequency (MHz)		Channel No.			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650	21A		21A	157.050	157.050	70*3	70*3	70*3	156.525	156.525
01A			156.050	156.050			21b	Rx only	161.650	71	71	71	156.575	156.575
	02	02	156.100	160.700		22		157.100	161.700	72	72	72	156.625	156.625
	03	03	156.150	160.750	22A		22A	157.100	157.100	73	73	73	156.675	156.675
03A			156.150	156.150		23	23	157.150	161.750	74	74	74	156.725	156.725
	04		156.200	160.800	23A			157.150	157.150	77*1	77	77*1	156.875	156.875
		04A	156.200	156.200	24	24	24	157.200	161.800		78		156.925	161.525
	05		156.250	160.850	25	25	25	157.250	161.850	78A		78A	156.925	156.925
05A		05A	156.250	156.250			25b	Rx only	161.850		79		156.975	161.575
06	06	06	156.300	156.300	26	26	26	157.300	161.900	79A		79A	156.975	156.975
	07		156.350	160.950	27	27	27	157.350	161.950		80		157.025	161.625
07A		07A	156.350	156.350	28	28	28	157.400	162.000	80A		80A	157.025	157.025
08	08	08	156.400	156.400			28b	Rx only	162.000		81		157.075	161.675
09	09	09	156.450	156.450		60	60	156.025	160.625	81A		81A	157.075	157.075
10	10	10	156.500	156.500		61		156.075	160.675		82		157.125	161.725
11	11	11	156.550	156.550	61A		61A	156.075	156.075	82A		82A	157.125	157.125
12	12	12	156.600	156.600		62		156.125	160.725		83	83	157.175	161.775
13*2	13	13*1	156.650	156.650			62A	156.125	156.125	83A		83A	157.175	157.175
14	14	14	156.700	156.700		63		156.175	160.775			83b	Rx only	161.775
15*2	15*1	15*1	156.750	156.750	63A			156.175	156.175	84	84	84	157.225	161.825
16	16	16	156.800	156.800		64	64	156.225	160.825	84A			157.225	157.225
17*1	17	17*1	156.850	156.850	64A		64A	156.225	160.825	85	85	85	157.275	161.875
	18		156.900	161.500		65		156.275	160.875	85A			157.275	157.275
18A		18A	156.900	156.900	65A	65A	65A	156.275	156.275	86	86	86	157.325	161.925
	19		156.950	161.550		66		156.325	160.925	86A			157.325	157.325
19A		19A	156.950	156.950	66A	66A	66A*1	156.325	156.325	87	87	87	157.375	161.975
20	20	20*1	157.000	161.600	67*2	67	67	156.375	156.375	87A			157.375	157.375
20A			157.000	157.000	68	68	68	156.425	156.425	88	88	88	157.425	162.025
	21	21	157.050	161.650	69	69	69	156.475	156.475	88A			157.425	157.425

*1 Low power only, *2 Momentary high power, *3 Receive only

NOTE: Simplex channels 3A, 21A, 23A, 61A, 64A, 81A, 82A and 83A **CANNOT** be used by the general public in USA waters.

■ WEATHER CHANNEL LIST

Weather channel	Frequency (MHz)		Weather channel	Frequency (MHz)	
	Transmit	Receive		Transmit	Receive
WX01	Receive only	162.550	WX06	Receive only	162.500
WX02	Receive only	162.400	WX07	Receive only	162.525
WX03	Receive only	162.475	WX08	Receive only	161.650
WX04	Receive only	162.425	WX09	Receive only	161.775
WX05	Receive only	162.450	WX10	Receive only	163.275

4 DISASSEMBLING

⚠CAUTION

DISCONNECT the DC power cable from the transceiver before performing any work on the transceiver. Otherwise, there is danger of electric shock and/or equipment damage.

Opening the transceiver case

1. Unscrew 6 screws Ⓐ to remove the front unit.
2. Unscrew 6 screws Ⓑ to remove the rear panel.

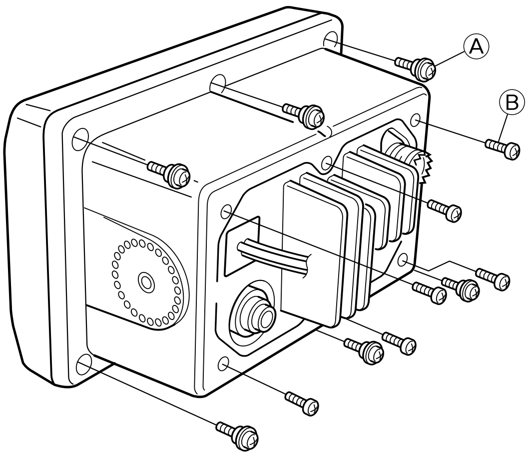


Fig. 4.1

Removing the LOGIC board

1. Unsolder 2 cables (Ⓒ × 2).
2. Disconnect J1, J3 and J4.
3. Disconnect the VOL connector (J1).
4. Unscrew 5 screws Ⓓ to remove the LOGIC board.

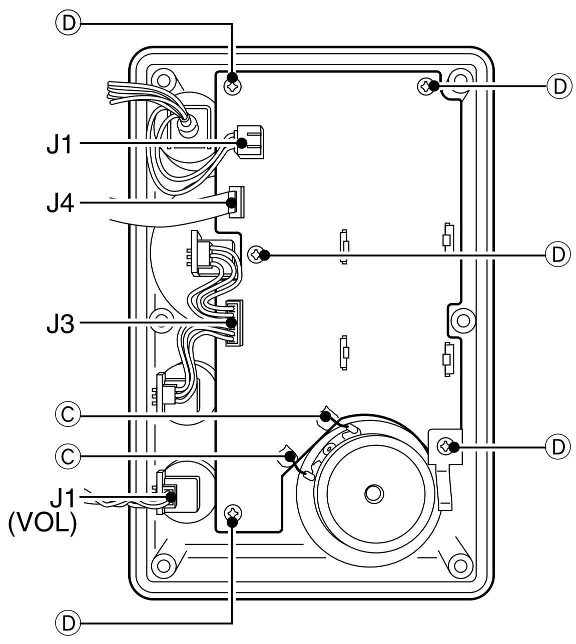


Fig. 4.2

Remove the MAIN board

1. Unscrew 4 screws Ⓔ fixing the shielding plate, then lift up the shielding plate.

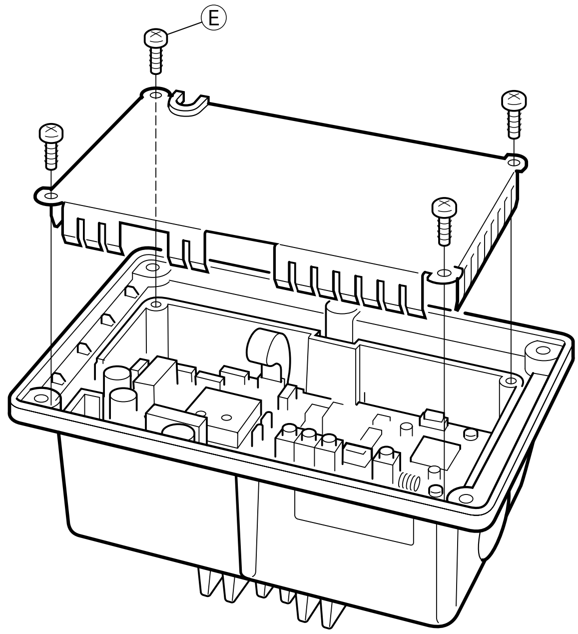


Fig. 4.3

2. Remove the clip Ⓕ.
3. Disconnect the microphone connector (J1), the CTRL connector (J6), the EX-SP connector (J2) and the NMEA connector (J5).
4. Unsolder Ⓖ × 11.
5. Unscrew 5 screws Ⓗ to remove the MAIN board.

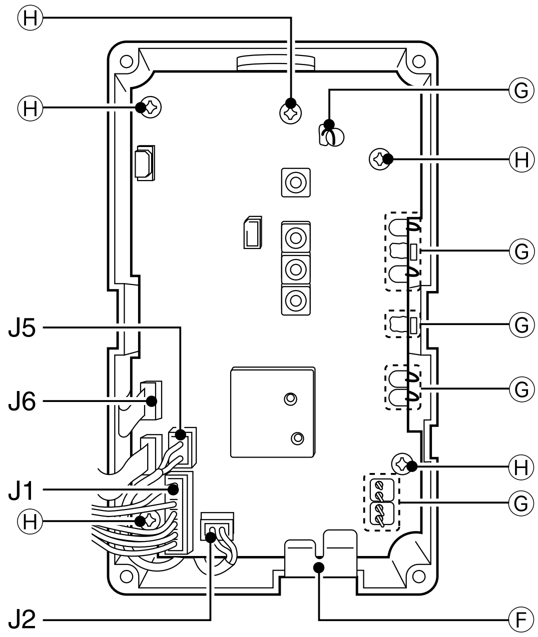


Fig. 4.4

5 ADJUSTMENT

5-1 PREPARATION

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	SPECIFICATIONS
DC power supply	Output voltage : 13.8 V DC Current capacity : 10 A or more
RF power meter (terminated type)	Measuring range : 1–50 W Frequency range : 100–300 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1
Frequency counter	Frequency range : 0.1–300 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better
FM deviation meter	Frequency range : 30–300 MHz Measuring range : 0 to ±10 kHz
DC voltmeter	Input impedance : 50 kΩ/V DC or better

EQUIPMENT	SPECIFICATIONS
Audio generator	Frequency range : 300–3000 Hz Measuring range : 1–500 mV
Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : 0.1 µV–32 mV (–127 to –17 dBm)
Oscilloscope	Frequency range : DC–20 MHz Measuring range : 0.01–20 V
AC millivoltmeter	Measuring range : 10 mV–10 V
External speaker	Input impedance : 4 Ω Capacity : 5 W or more
Attenuator	Power attenuation : 40 or 50 dB Capacity : 50 W or more

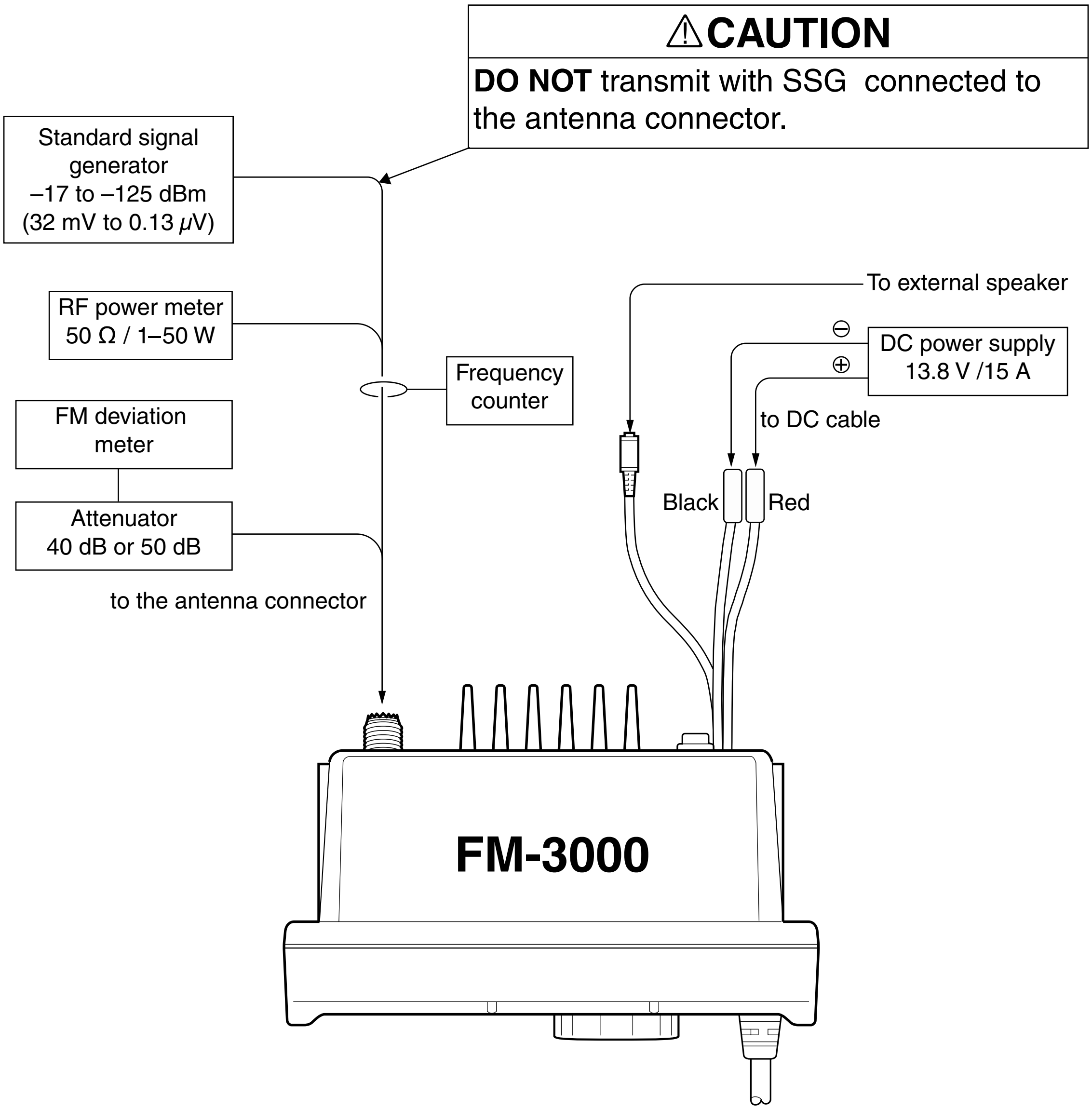


Fig. 5.1 CONNECTIONS

5-2 PLL

ADJUSTMENT		CONDITION	MEASUREMENT	RATINGS	ADJUSTER
LOCK VOLTAGE	1	• Operating channel : chP2 (163.425 MHz) • Receiving	Connect a digital multi-meter or oscilloscope to check point CP2 on MAIN board.	3.6 V	L9 on MAIN board
	2	• Operating channel : chP2 (161.450 MHz) • Output power : Low • Transmitting	Connect a digital multi-meter or oscilloscope to check point CP1 on MAIN board.	3.3 V	L4 on MAIN board
REFERENCE FREQUENCY	1	• Operating channel : ch16 • Output power : Low • Connect an RF power meter or a 50 Ω dummy load to the antenna connector. • Transmitting	Loosely couple a frequency counter to the antenna connector.	156.8000 MHz	C12 on MAIN board

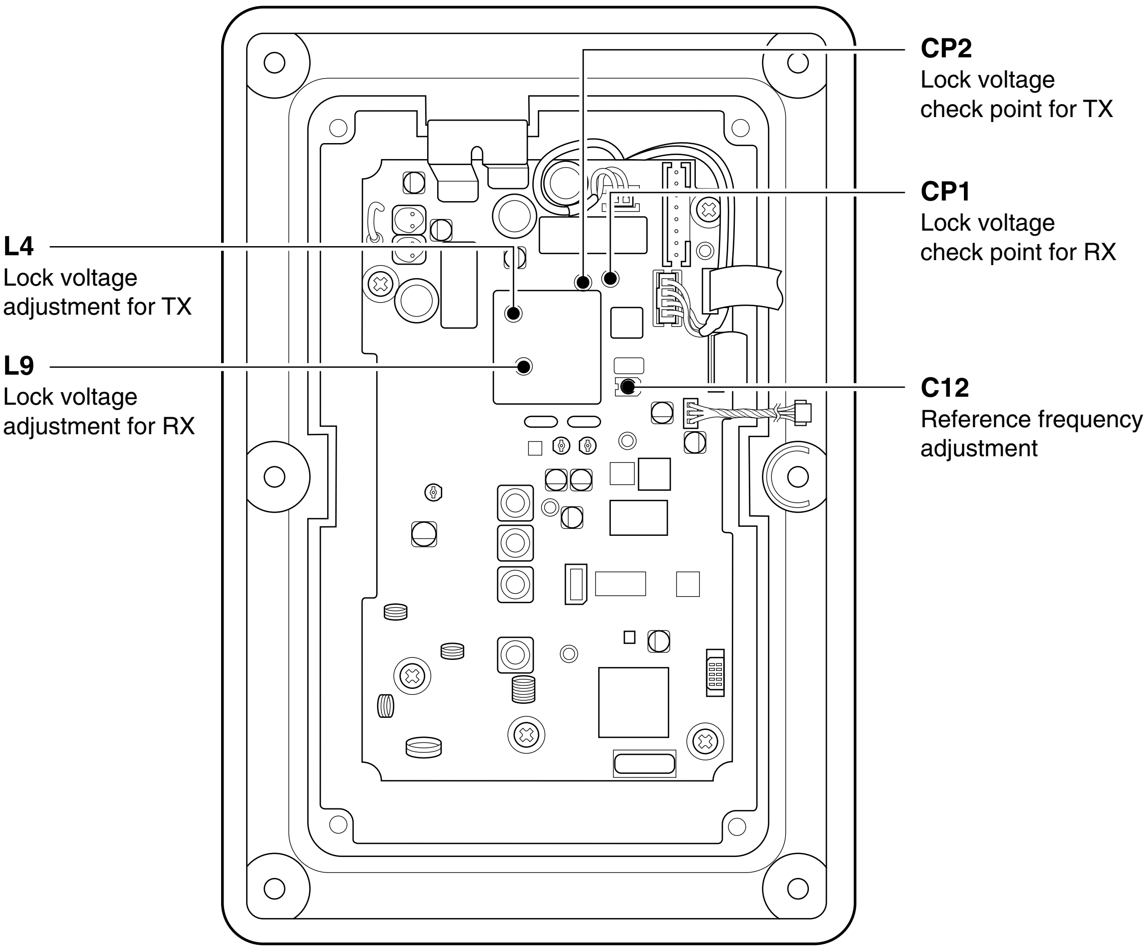


Fig. 5.2 MAIN board with cover removed

5-3 TRANSMITTER

ADJUSTMENT		CONDITION	MEASUREMENT	RATINGS	ADJUSTER
OUTPUT POWER	1	• Operating channel : ch16 • Output power : High • Transmitting	Connect an RF power meter to the antenna connector.	23.5 W	R114 on MAIN board
FREQUENCY DEVIATION	1	• Operating channel : ch16 • Output power : Low • Connect an audio generator to J7 (pin 5) with an AC millivoltmeter and set as below: Frequency : 1 kHz Level : 30 mV • Set an FM deviation meter as below: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P–P)/2 • Transmitting	Connect an FM deviation meter to the antenna connector through an attenuator.	±4.3 kHz	R381 on MAIN board

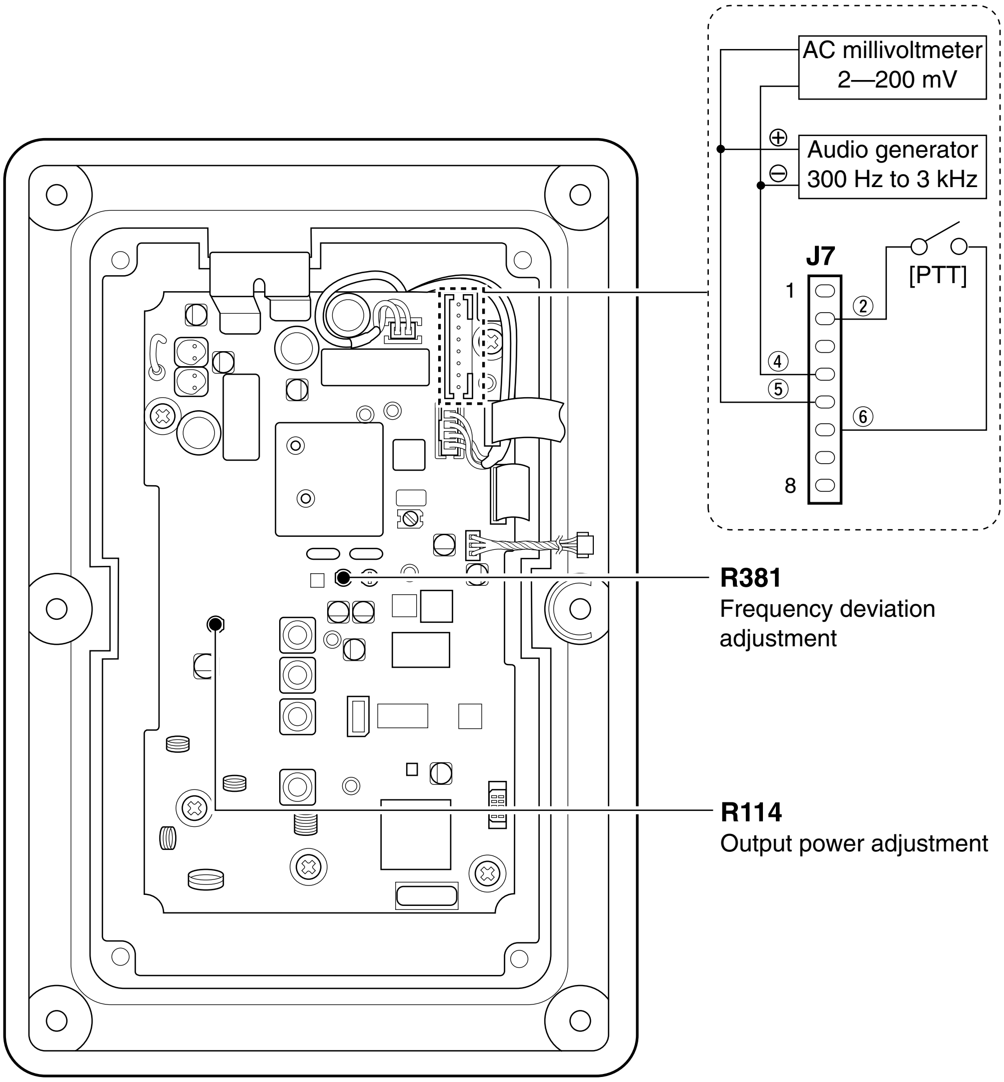


Fig. 5.3 MAIN board with cover removed

5-4 RECEIVER

ADJUSTMENT		CONDITION	MEASUREMENT	RATINGS	ADJUSTER on MAIN board
SENSITIVITY	1	• Operating channel : ch16 • [SQUELCH] control: Max. counterclockwise • Set the internal speaker OFF in the SET mode, and connect a distortion meter with a 4 Ω load to [EXT SP] receptacle. • Connect an SSG to the antenna connector and set as: Frequency : 156.800 MHz Level : 3.2 μV* (–97 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	Connect a DC voltmeter to check point CP3 on MAIN board.	Maximum voltage	L35, L36, L38, L39
SQUELCH	1	• Operating channel : ch16 • [SQUELCH] control: Max. counterclockwise • Connect an SSG to the antenna connector and set as: Frequency : 156.800 MHz Level : 0.40 μV* (–115 dBm) Modulation : 1 kHz Deviation : ±3.5 kHz • Receiving	Connect a DC voltmeter to check point CP5 on MAIN board.	1.05 V	R214

*This output level of a standard signal generator (SSG) is indicated as SSG's open circuit.

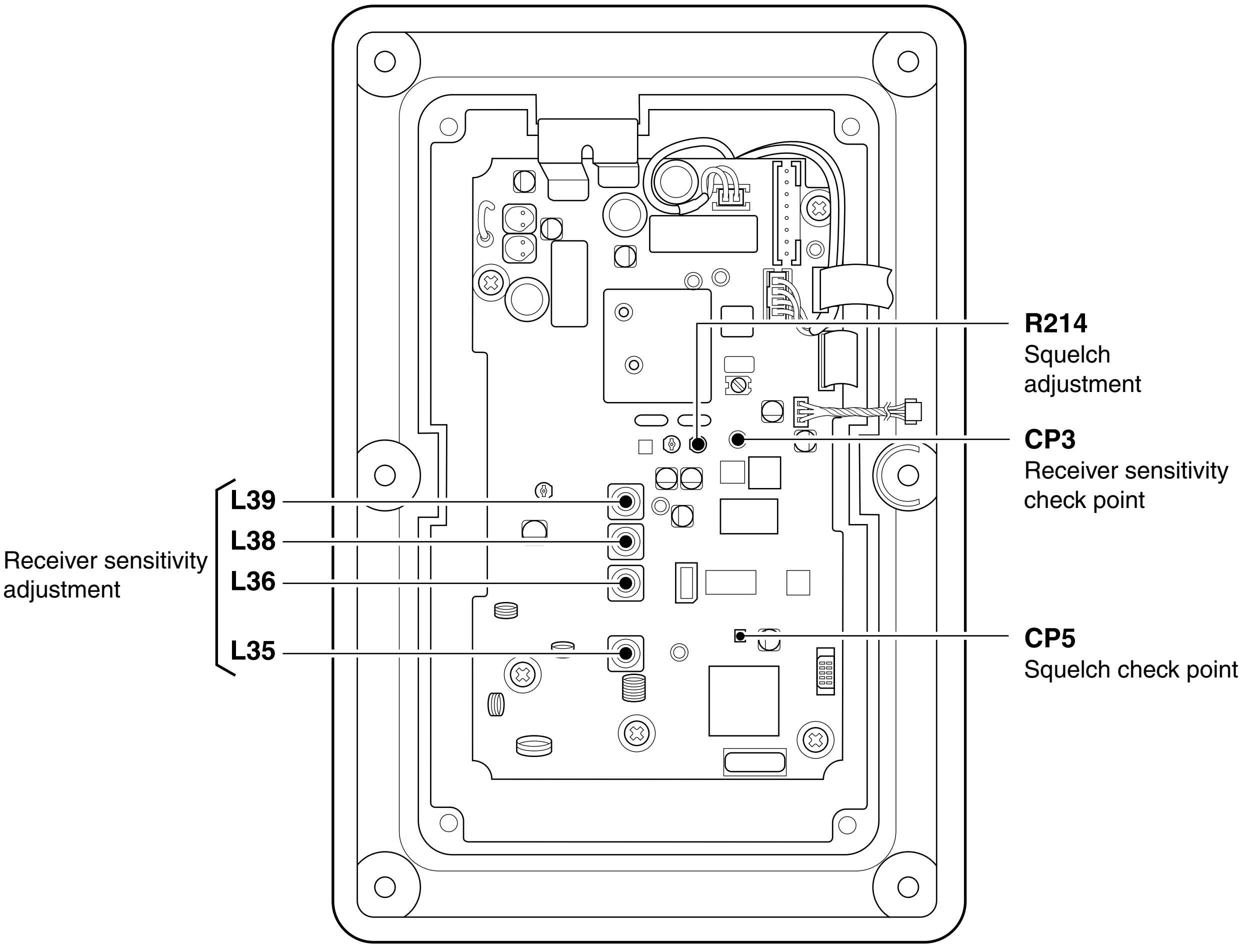


Fig. 5.4 MAIN board with cover removed

6 ELECTRICAL PARTS LIST

(1) FM-3000

VOL BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R1	7210003080	VARIABLE	TP96N97-15F-10KA-2345	T
J1	6510009470	CONNECTOR	S3B-ZR	T
EP1	0910056630	PCB	B 6038	

SQL BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R1	7210002360	VARIABLE	TP96N97-15F-10KB-1301	T
W1	8900009870	CABLE	OPC-971	T
EP1	0910056641	PCB	B 6039A	

DIAL BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
S1	2250000220	ENCODER	TP90N937E20-15F-1540	T
EP1	0910056651	PCB	B 6040A	

PWR-CORD BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
C1	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
J1	6510003130	CONNECTOR	SB4P-HVQ-22	T
W1	7030010840	S.JUMPER	MJP-0.2-T	T
EP1	0910056621	PCB	B 6037A	

FRONT UNIT

REF NO.	ORDER NO.	DESCRIPTION		M.
MC1	0800007300	MICROPHONE	FM-3001 MIC ACC <KN>	
SP1	2510001240	SPEAKER	045P0803 <FG>	
W1	7120000470	JUMPER	ERDS2T0	
W2	7120000470	JUMPER	ERDS2T0	

LOGIC BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
IC1	1140011720	S.IC	μPD789405AGK-B03-9EU (FX-2697C)	B
IC2	1140008960	S.IC	HD66712SA03FS	B
Q1	1560000810	S.FET	2SK1069-4-TL	B
Q2	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
Q3	1520000460	S.TRANSISTOR	2SB1132 T100 R	B
Q4	1560000810	S.FET	2SK1069-4-TL	B
Q5	1590000720	S.TRANSISTOR	DTA144EUA T106	B
Q6	1590000430	S.TRANSISTOR	DTC144EUA T106	B
Q8	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
D1	1790001010	S.ZENER	MA8043-L (TX)	B
X1	6060000750	S.CERAMIC	CSTCC4M91G53-R0 (CSTCC4.91M)	B
R1	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R2	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R3	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R4	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R5	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R6	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)	B
R7	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	B
R8	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R9	7510001670	S.THERMISTOR	NTCG16 4BH 103KT	B
R10	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R11	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R13	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R14	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R15	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R16	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R17	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R18	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R19	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R20	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)	B
R22	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R23	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	B
R24	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R25	7510001670	S.THERMISTOR	NTCG16 4BH 103KT	B
R26	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R27	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R28	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R30	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R32	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R33	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R34	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R35	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R36	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R37	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R38	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)	B
R41	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R42	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R43	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R44	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R45	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R46	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	B

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

LOGIC BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R47	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R48	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R49	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R50	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)	B
R51	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)	B
R52	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R53	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R54	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R55	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R56	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	B
R64	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	B
R65	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R66	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R67	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R68	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R69	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	B
R70	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
C1	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C2	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C3	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C4	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C5	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C6	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C7	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C8	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C9	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C11	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	B
C12	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C13	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C14	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C15	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C16	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C17	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	B
C18	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C19	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C20	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C21	4510004440	S.ELECTROLYTIC	ECEV1HA010SR	B
C22	4510004440	S.ELECTROLYTIC	ECEV1HA010SR	B
C23	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C24	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C25	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
J1	6510021600	S.CONNECTOR	S2B-PH-SM3-TB	B
J3	6510021440	S.CONNECTOR	B6B-ZR-SM3-TF	B
J4	6510022020	S.CONNECTOR	14FLT-SM1-TB	B
DS1	5030001880	LCD	TSD0393-UFFDCW	T
DS2	5040002990	S.LED	SML-512UWT86	T
DS3	5040003060	S.LED	SML-512WWT86	T
DS4	5040003060	S.LED	SML-512WWT86	T
DS5	5040003060	S.LED	SML-512WWT86	T
DS6	5040003060	S.LED	SML-512WWT86	T
DS7	5040003060	S.LED	SML-512WWT86	T
DS8	5040003060	S.LED	SML-512WWT86	T
DS9	5040003060	S.LED	SML-512WWT86	T
DS10	5040003060	S.LED	SML-512WWT86	T
DS11	5040003060	S.LED	SML-512WWT86	T
DS12	5040003060	S.LED	SML-512WWT86	T
DS13	5040003060	S.LED	SML-512WWT86	T
DS14	5040003060	S.LED	SML-512WWT86	T
DS15	5040003060	S.LED	SML-512WWT86	T
DS16	5040003060	S.LED	SML-512WWT86	T
DS17	5040003060	S.LED	SML-512WWT86	T
S1	2230000250	SWITCH	SPPH22014A	T
EP1	0910056660	PCB	B 6041 (#2697-2A)	
EP2	8930052590	LCD CONTACT	SRCN-2345-SP-N-W	T

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
IC1	1130007610	S.IC	μPD3140GS-E1 (DS8)	T
IC2	1120002830	S.IC	NJM2125F-TE1	B
IC3	1150002080	IC	RA35H1516M-01	B
IC5	1110003200	S.IC	TA31136FN (EL)	T
IC6	1120002830	S.IC	NJM2125F-TE1	B
IC7	1110000960	S.IC	NJM4558M-T1	T
IC8	1110003650	S.IC	NJM2211M-TE1	T
IC9	1130007420	S.IC	TC7W14FU (TE12L)	T
IC10	1110002030	IC	TA7808S	T
IC12	1180001070	S.IC	TA7805F (TE16L)	B
IC13	1130007690	S.IC	BU4066BCF-E2	B
IC14	1110003090	IC	LA4425A	T
IC15	1110000960	S.IC	NJM4558M-T1	B
IC16	1130007690	S.IC	BU4066BCF-E2	B
IC17	1110000960	S.IC	NJM4558M-T1	B
IC18	1140008650	S.IC	HN58X2464TI	T
IC19	1140011540	S.IC	MB90583CA-139	T
IC20	1110005730	S.IC	S-80928CNMC-G8Y-T2	T
IC21	1130007420	S.IC	TC7W14FU (TE12L)	T
IC22	1170000350	S.IC	PC357N6T	T
IC24	1130007020	S.IC	TC7S66FU (TE85R)	T
IC25	1130007020	S.IC	TC7S66FU (TE85R)	T
Q1	1560000540	S.FET	2SK880-Y (TE85R)	B
Q2	1560000540	S.FET	2SK880-Y (TE85R)	B
Q3	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)	B
Q4	1560000340	S.FET	2SK210-Y (TE85R)	T
Q5	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
Q6	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)	T
Q7	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)	B
Q8	1560000990	S.FET	PMBFJ310	T
Q9	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	T
Q10	1530002920	S.TRANSISTOR	2SC4226-T1 R25	T
Q12	1530002240	S.TRANSISTOR	2SC3775-3-TB	T
Q13	1510000920	S.TRANSISTOR	2SA1577 T106 Q	T
Q15	1590000430	S.TRANSISTOR	DTC144EUA T106	T
Q16	1590000670	S.TRANSISTOR	FMW1 T148	T
Q17	1590000680	S.TRANSISTOR	DTC114EUA T106	T
Q18	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	T
Q21	1580000700	S.FET	3SK292 (TE85R)	T
Q22	1580000430	S.FET	3SK206-T1 U78	B
Q23	1530002360	S.TRANSISTOR	2SC2714-Y (TE85R)	T
Q31	1520000460	S.TRANSISTOR	2SB1132 T100 R	T
Q32	1590000430	S.TRANSISTOR	DTC144EUA T106	T
Q33	1520000460	S.TRANSISTOR	2SB1132 T100 R	T
Q34	1590000430	S.TRANSISTOR	DTC144EUA T106	T
Q35	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	T
Q36	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	T
Q37	1590001390	S.FET	2SJ144-Y (TE85R)	B
Q38	1590001390	S.FET	2SJ144-Y (TE85R)	B
Q39	1560000810	S.FET	2SK1069-4-TL	B
Q40	1590001390	S.FET	2SJ144-Y (TE85R)	B
Q41	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
Q42	1530002550	S.TRANSISTOR	2SC3326-B (TE85R)	B
Q43	1590000430	S.TRANSISTOR	DTC144EUA T106	B
Q44	1590000430	S.TRANSISTOR	DTC144EUA T106	B
Q46	1590000720	S.TRANSISTOR	DTA144EUA T106	T
Q51	1560000810	S.FET	2SK1069-4-TL	B
Q52	1590000720	S.TRANSISTOR	DTA144EUA T106	B
Q53	1590000720	S.TRANSISTOR	DTA144EUA T106	B
Q54	1590000720	S.TRANSISTOR	DTA144EUA T106	B
Q55	1560000810	S.FET	2SK1069-4-TL	B
Q56	1530002060	S.TRANSISTOR	2SC4081 T106 R	B
Q57	1510000510	S.TRANSISTOR	2SA1576A T106R	B
Q58	1590000660	S.TRANSISTOR	DTC144TU T106	B
Q59	1530002280	S.TRANSISTOR	2SC4081 T106 S	B
Q60	1590000430	S.TRANSISTOR	DTC144EUA T106	B
Q61	1590000720	S.TRANSISTOR	DTA144EUA T106	B
Q62	1590000660	S.TRANSISTOR	DTC144TU T106	B
D1	1750000980	S.VARICAP	1SV278 (TPH3)	T
D2	1750000980	S.VARICAP	1SV278 (TPH3)	T
D3	1720000640	S.VARICAP	1SV284 (TPH3)	T
D4	1720000810	S.VARICAP	HVC358BTRF	T
D5	1720000810	S.VARICAP	HVC358BTRF	T
D6	1750000550	S.DIODE	1SS355 TE-17	B
D7	1790000620	S.DIODE	MA77 (TX)	B
D8	1790000620	S.DIODE	MA77 (TX)	B
D9	1750000550	S.DIODE	1SS355 TE-17	T
D11	1730002340	S.ZENER	MA8047-M (TX)	T
D12	1790000690	S.DIODE	HSM88ASR-TR	T
D13	1790000690	S.DIODE	HSM88ASR-TR	T
D14	1710001080	DIODE	XB15A308	T
D21	1710001080	DIODE	XB15A308	T
D22	1790000620	S.DIODE	MA77 (TX)	B
D23	1790000620	S.DIODE	MA77 (TX)	B

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
D24	1790001210	S.DIODE	1SS375-TL	B
D25	1720000260	S.VARICAP	1SV214 (TPH2)	B
D26	1720000260	S.VARICAP	1SV214 (TPH2)	B
D27	1720000260	S.VARICAP	1SV214 (TPH2)	B
D28	1720000260	S.VARICAP	1SV214 (TPH2)	B
D29	1720000260	S.VARICAP	1SV214 (TPH2)	B
D30	1720000260	S.VARICAP	1SV214 (TPH2)	B
D31	1720000260	S.VARICAP	1SV214 (TPH2)	B
D32	1790001330	S.ZENER	MA8036-L (TX)	T
D41	1790000700	DIODE	DSA3A1	T
D42	1750000550	S.DIODE	1SS355 TE-17	B
D43	1750000130	S.DIODE	DA204U T106	B
D44	1750000130	S.DIODE	DA204U T106	B
D45	1750000550	S.DIODE	1SS355 TE-17	B
D46	1160000050	S.DIODE	DAP202U T106	B
D47	1750000130	S.DIODE	DA204U T106	B
D52	1750000130	S.DIODE	DA204U T106	B
D53	1160000050	S.DIODE	DAP202U T106	B
D54	1730002360	S.ZENER	MA8062-M (TX)	B
D55	1750000150	S.DIODE	DA204K T146	B
D56	1750000550	S.DIODE	1SS355 TE-17	T
FI1	2030000350	MONOLITH	21R15AB (FL-368)	T
FI2	2030000270	MONOLITH	FL-363 (21.7 MHz)	T
FI3	2020001680	CERAMIC	ALFY450E	T
X1	6050011740	S.XTAL	CR-766 (21.250 MHz)	T
X2	6070000190	S.DISCRIMINATOR	CDBCB450KCAY24-R0 (CDBC450CX24)	T
X4	6050011800	S.XTAL	CR-769 (7.9872 MHz)	T
L1	6200009560	S.COIL	MLG1608B R10J-T	B
L2	6200006990	S.COIL	ELJRE 56NG-F	B
L3	6200003320	S.COIL	NL 322522T-3R3J-3	T
L4	6130002370	S.COIL	LB-258	T
L5	6200003090	S.COIL	NL 322522T-2R7J-3	T
L6	6200009560	S.COIL	MLG1608B R10J-T	T
L7	6200009560	S.COIL	MLG1608B R10J-T	B
L8	6200003100	S.COIL	NL 322522T-3R9J-3	T
L9	6130002370	S.COIL	LB-258	T
L10	6200003100	S.COIL	NL 322522T-3R9J-3	T
L11	6200002410	S.COIL	NL 252018T-056J	T
L13	6200009530	S.COIL	ELJRE R15G-F3	T
L14	6200005740	S.COIL	ELJRE 47NG-F	T
L15	6200002430	S.COIL	NL 252018T-082J	T
L16	6200002430	S.COIL	NL 252018T-082J	T
L17	6200002600	S.COIL	NL 252018T-047J	T
L18	6200002600	S.COIL	NL 252018T-047J	T
L19	6110001600	COIL	LA-243	T
L20	6170000230	COIL	LW-25	T
L21	6110001600	COIL	LA-243	T
L22	6110001730	COIL	LA-262	T
L31	6110001600	COIL	LA-243	T
L32	6110001580	COIL	LA-238	T
L33	6200007360	S.COIL	ELJND R47J 0.47U	B
L34	6200007360	S.COIL	ELJND R47J 0.47U	B
L35	6150003820	COIL	LS-440	T
L36	6150003820	COIL	LS-440	T
L37	6200007360	S.COIL	ELJND R47J 0.47U	B
L38	6150003820	COIL	LS-440	T
L39	6150003820	COIL	LS-440	T
L41	6200010780	S.COIL	C2520C-1ROG-A	T
R1	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	T
R2	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R3	7410000950	S.ARRAY	EXB-V8V 102JV	T
R4	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)	B
R5	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R6	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)	B
R8	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R9	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)	B
R10	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R11	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)	B
R12	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)	T
R13	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R14	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	B
R15	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R16	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R17	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R22	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R23	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)	B
R24	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	B
R26	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R27	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R31	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)	B

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R32	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)	B
R33	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R34	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)	B
R35	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R41	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	T
R42	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)	T
R43	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)	T
R51	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	B
R52	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R53	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)	T
R54	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)	T
R55	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R56	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	B
R57	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)	B
R58	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	B
R59	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)	B
R61	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	T
R62	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	T
R63	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	T
R71	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R72	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)	T
R73	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)	T
R74	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	B
R75	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R81	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R82	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)	T
R83	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R84	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)	T
R85	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)	T
R86	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R87	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R88	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	T
R91	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	T
R92	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	T
R93	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)	T
R94	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)	T
R95	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	T
R96	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)	T
R103	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	T
R104	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)	T
R107	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	T
R110	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)	T
R111	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R112	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R113	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R114	7310002670	S.TRIMMER	RV-143 (RH03A3AS2) 471	T
R115	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	T
R116	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)	T
R121	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)	T
R122	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)	T
R123	7030001150	S.RESISTOR	MCR50JZHJ 150 Ω (151)	T
R125	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R126	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)	T
R127	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)	T
R142	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)	B
R143	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	B
R144	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)	B
R145	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	B
R146	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)	B
R147	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R148	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	B
R149	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)	B
R150	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R151	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	T
R152	7030003860	S.RESISTOR	ERJ3GE JPW V	T
R153	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	T
R154	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)	T
R155	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)	B
R157	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)	B
R171	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)	B
R172	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)	B
R173	7030003860	S.RESISTOR	ERJ3GE JPW V	T
R174	7030003860	S.RESISTOR	ERJ3GE JPW V	T
R181	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R182	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)	B
R183	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	B
R184	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)	B
R185	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	B
R201	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	T
R202	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)	T
R203	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R204	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	B
R205	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	T
R206	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)	T
R207	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	T
R208	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	T
R211	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	B
R212	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)	B

S.=Surface mount

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R213	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	B
R214	7310002760	S.TRIMMER	RV-152 (RH03A3AJ4X0HA) 223	T
R215	7510001660	S.THERMISTOR	NTCG16 4LH 437KT	T
R216	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)	T
R218	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	B
R219	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)	B
R221	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R222	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R223	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R224	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R225	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R226	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R227	7510001590	S.THERMISTOR	NTCG16 4BH 682KT	B
R231	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R232	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R233	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R234	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R235	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R236	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	T
R237	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R238	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)	T
R239	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	T
R240	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	T
R241	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	T
R242	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	T
R243	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R244	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	T
R245	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R246	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	T
R251	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	T
R252	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)	T
R261	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)	T
R262	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)	T
R263	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)	T
R271	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R272	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R273	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	T
R274	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R281	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	T
R282	7030006091	S.RESISTOR	ERA3YED 822V	T
R284	7030006101	S.RESISTOR	ERA3YED 183V	B
R285	7030005981	S.RESISTOR	ERA3YED 333V	B
R291	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)	T
R292	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	T
R293	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)	T
R294	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)	T
R295	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)	T
R296	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)	T
R297	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	T
R298	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	T
R299	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	T
R300	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	T
R301	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R302	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	B
R303	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R304	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	B
R305	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R310	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R311	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	T
R312	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R314	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R315	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R316	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R317	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)	B
R318	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)	B
R319	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R320	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R321	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R322	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R323	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)	B
R331	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R332	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R333	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R334	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R341	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R342	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R343	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R344	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)	T
R351	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B
R352	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	B
R353	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	T
R354	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)	B
R355	7030000100	S.RESISTOR	MCR10EZHJ 4.7 Ω (4R7)	B
R356	7030000320	S.RESISTOR	MCR10EZHJ 330 Ω (331)	B
R357	7030000320	S.RESISTOR	MCR10EZHJ 330 Ω (331)	B
R358	7030000320	S.RESISTOR	MCR10EZHJ 330 Ω (331)	B
R359	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	B
R360	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)	B

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R361	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R362	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B
R363	7030003820	S.RESISTOR	ERJ3GEYJ 155 V (1.5 MΩ)	B
R367	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R368	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R369	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	B
R370	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R371	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R372	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R373	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R374	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R375	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R376	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R377	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R381	7310002600	S.TRIMMER	RV-110 (RH03A3AS4X0AA) 473	T
R382	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)	B
R383	7510001670	S.THERMISTOR	NTCG16 4BH 103KT	B
R384	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)	B
R385	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B
R386	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)	B
R387	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)	B
R388	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)	B
R389	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R391	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R392	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R393	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)	B
R394	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R395	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)	B
R401	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R402	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R403	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)	B
R404	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)	T
R405	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	T
R406	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R407	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R408	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R409	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R410	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R411	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	T
R412	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	T
R413	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R414	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R415	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R416	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R417	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R418	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R419	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R420	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R421	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R422	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R424	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R425	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)	B
R426	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R427	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R428	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	B
R429	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)	B
R430	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R431	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R432	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R433	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	T
R434	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	T
R435	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R441	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R442	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R443	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R444	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R445	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R446	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	B
R447	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R448	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R449	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B
R450	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R451	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R453	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R454	7030003210	S.RESISTOR	ERJ3GEYJ 120 V (12 Ω)	B
R455	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R456	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)	T
R457	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)	T
R458	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R459	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
C1	4030008880	S.CERAMIC	C1608 JB 1H 223K-T	T
C3	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C4	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C5	4550006560	S.TANTALUM	ECST1CY225R	B
C7	4030017480	S.CERAMIC	C1608 JB 1A 474K-T	B
C8	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B

S.=Surface mount

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
C9	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C11	4030007020	S.CERAMIC	C1608 CH 1H 120J-T	T
C12	4610001590	S.TRIMMER	TZC3R100A110R00	T
C13	4030007060	S.CERAMIC	C1608 CH 1H 270J-T	T
C14	4550000510	S.TANTALUM	TEESVA 1V 473M8L	B
C17	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C18	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C21	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C22	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C23	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C31	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C32	4030009920	S.CERAMIC	C1608 CH 1H 050B-T	B
C33	4030009990	S.CERAMIC	C1608 CH 1H 200J-T	B
C34	4030007060	S.CERAMIC	C1608 CH 1H 270J-T	B
C35	4030007060	S.CERAMIC	C1608 CH 1H 270J-T	B
C36	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C37	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C41	4550006130	S.TANTALUM	ECST1VY224R	T
C42	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T	T
C43	4030009520	S.CERAMIC	C1608 CH 1H 020B-T	T
C44	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C45	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C46	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C47	4030008220	S.CERAMIC	C1608 UJ 1H 070D-T	T
C48	4030009910	S.CERAMIC	C1608 CH 1H 040B-T	T
C49	4030009530	S.CERAMIC	C1608 CH 1H 030B-T	T
C50	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C51	4030009530	S.CERAMIC	C1608 CH 1H 030B-T	T
C52	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T	T
C53	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C54	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C55	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C56	4030007020	S.CERAMIC	C1608 CH 1H 120J-T	B
C57	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C58	4030007020	S.CERAMIC	C1608 CH 1H 120J-T	B
C59	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C61	4550000510	S.TANTALUM	TEESVA 1V 473M8L	T
C63	4030008260	S.CERAMIC	C1608 UJ 1H 150J-T	T
C64	4030008260	S.CERAMIC	C1608 UJ 1H 150J-T	T
C65	4030007030	S.CERAMIC	C1608 CH 1H 150J-T	T
C66	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C67	4550006700	S.TANTALUM	ECST1AY106R	B
C68	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C69	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C70	4030009560	S.CERAMIC	C1608 CH 1H R75B-T	T
C71	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	T
C72	4550006700	S.TANTALUM	ECST1AY106R	T
C73	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C74	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C75	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C76	4030007080	S.CERAMIC	C1608 CH 1H 390J-T	T
C77	4030007080	S.CERAMIC	C1608 CH 1H 390J-T	T
C81	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C82	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C83	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	T
C84	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C85	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C86	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C87	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	T
C88	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C91	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C92	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C93	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C94	4030009530	S.CERAMIC	C1608 CH 1H 030B-T	T
C95	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C96	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	T
C97	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C101	4030007050	S.CERAMIC	C1608 CH 1H 220J-T	T
C102	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C103	4030007080	S.CERAMIC	C1608 CH 1H 390J-T	T
C104	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	T
C105	4550006710	S.TANTALUM	ECST1AX226R	T
C106	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C107	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	T
C108	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C109	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C110	4510005310	S.ELECTROLYTIC	ECEV1CA220SR	T
C112	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C113	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C115	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C116	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C117	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C118	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C119	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C120	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C121	4030011170	S.CERAMIC	GRM31M2C2H180JV01L (GRM42-6 CH)	T
C122	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C123	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
C124	4030011170	S.CERAMIC	GRM31M2C2H180JV01L (GRM42-6 CH)	T
C125	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C126	4030017200	S.CERAMIC	GRM31BR32J102KY01L (GHM1030 R)	T
C127	4030011170	S.CERAMIC	GRM31M2C2H180JV01L (GRM42-6 CH)	T
C130	4030011190	S.CERAMIC	GRM31M2C2H270JV01L (GRM42-6 CH)	T
C135	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C141	4030011210	S.CERAMIC	GRM31M2C2H330JV01L (GRM42-6 CH)	B
C142	4030011190	S.CERAMIC	GRM31M2C2H270JV01L (GRM42-6 CH)	B
C143	4030018350	S.CERAMIC	GRM31A5C2J151JW01D	T
C145	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C146	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C147	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C148	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C149	4030009510	S.CERAMIC	C1608 CH 1H 010B-T	T
C150	4030007010	S.CERAMIC	C1608 CH 1H 100D-T	T
C151	4030009570	S.CERAMIC	C1608 CH 1H 0R3B-T	B
C152	4030007030	S.CERAMIC	C1608 CH 1H 150J-T	B
C153	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C154	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T	B
C155	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C156	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C157	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C158	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C159	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C160	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C161	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T	B
C162	4030007030	S.CERAMIC	C1608 CH 1H 150J-T	B
C163	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C164	4030009530	S.CERAMIC	C1608 CH 1H 030B-T	B
C165	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C171	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C172	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C173	4030007030	S.CERAMIC	C1608 CH 1H 150J-T	B
C174	4030009520	S.CERAMIC	C1608 CH 1H 020B-T	B
C175	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T	B
C176	4030009520	S.CERAMIC	C1608 CH 1H 020B-T	B
C177	4030009520	S.CERAMIC	C1608 CH 1H 020B-T	B
C178	4030007030	S.CERAMIC	C1608 CH 1H 150J-T	B
C179	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C180	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C181	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C182	4030009510	S.CERAMIC	C1608 CH 1H 010B-T	B
C183	4030007010	S.CERAMIC	C1608 CH 1H 100D-T	B
C184	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C186	4030018690	S.CERAMIC	CM105 CH 470G 50AT	B
C187	4030008880	S.CERAMIC	C1608 JB 1H 223K-T	B
C188	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C189	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C190	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C191	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C193	4030011770	S.CERAMIC	C1608 CH 1H 060B-T	B
C195	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C197	4030009910	S.CERAMIC	C1608 CH 1H 040B-T	B
C201	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C202	4030008880	S.CERAMIC	C1608 JB 1H 223K-T	T
C203	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C204	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C205	4030007130	S.CERAMIC	C1608 CH 1H 101J-T	T
C206	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	T
C207	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C208	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C209	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C210	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C211	4030011280	S.CERAMIC	C1608 CH 1H 271J-T	B
C212	4030011280	S.CERAMIC	C1608 CH 1H 271J-T	B
C213	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C215	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C216	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C217	4030007050	S.CERAMIC	C1608 CH 1H 220J-T	B
C218	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C219	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C220	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C221	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C222	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C223	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C224	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C225	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C231	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C232	4030008850	S.CERAMIC	C1608 JB 1H 123K-T	T
C233	4030008900	S.CERAMIC	C1608 JB 1H 333K-T	T
C234	4030008900	S.CERAMIC	C1608 JB 1H 333K-T	T
C235	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C236	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C237	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C238	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C239	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C240	4030008920	S.CERAMIC	C1608 JB 1H 473K-T	T
C241	4550006700	S.TANTALUM	ECST1AY106R	T

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
C242	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C244	4340000020	S.MYLAR	ECWU 1C 333JB5	T
C245	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C246	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C247	4030006870	S.CERAMIC	C1608 JB 1H 222K-T	T
C248	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	T
C251	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C252	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	T
C261	4510005350	ELECTROLYTIC	25 MV 220 HC	T
C266	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C267	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C268	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C269	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C270	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C271	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C273	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C274	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C277	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C278	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C279	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C280	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	T
C282	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C283	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C284	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C285	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C286	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C291	4550000530	S.TANTALUM	TEESVA 1V 104M8L	T
C292	4030008890	S.CERAMIC	C1608 JB 1H 273K-T	T
C293	4030008890	S.CERAMIC	C1608 JB 1H 273K-T	T
C294	4030006870	S.CERAMIC	C1608 JB 1H 222K-T	T
C295	4030009490	S.CERAMIC	C1608 JB 1H 821K-T	T
C296	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C297	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C301	4030010770	S.CERAMIC	C1608 JB 1H 392K-T	B
C302	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	B
C303	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	B
C304	4030010770	S.CERAMIC	C1608 JB 1H 392K-T	B
C305	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	B
C311	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C312	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C313	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C314	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C315	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C316	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C322	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C324	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C331	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	B
C332	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C333	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C334	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C335	4030011340	S.CERAMIC	C1608 CH 1H 471J-T	B
C336	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C341	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C342	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C351	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C352	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	B
C353	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C354	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C355	4510004590	ELECTROLYTIC	16 MV 470 HC	T
C356	4510004590	ELECTROLYTIC	16 MV 470 HC	T
C357	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C361	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C362	4030007040	S.CERAMIC	C1608 CH 1H 180J-T	B
C363	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	B
C365	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C367	4030008880	S.CERAMIC	C1608 JB 1H 223K-T	B
C368	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C371	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C372	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C373	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C374	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C375	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C376	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C377	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C381	4030017480	S.CERAMIC	C1608 JB 1A 474K-T	B
C382	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C383	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C384	4030009880	S.CERAMIC	C1608 JB 1H 682K-T	B
C385	4030010770	S.CERAMIC	C1608 JB 1H 392K-T	B
C386	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C387	4030007120	S.CERAMIC	C1608 CH 1H 820J-T	B
C389	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C391	4030007050	S.CERAMIC	C1608 CH 1H 220J-T	B
C392	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C401	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C403	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C404	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	T
C405	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
C406	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C407	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C422	4030009650	S.CERAMIC	C1608 CH 1H 240J-T	B
C423	4030009650	S.CERAMIC	C1608 CH 1H 240J-T	B
C424	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C426	4030008890	S.CERAMIC	C1608 JB 1H 273K-T	T
C442	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	T
C443	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C451	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C453	4030006880	S.CERAMIC	C1608 JB 1H 472K-T	T
RL1	6330001670	RELAY	FTR-P3CP012W1	T
RL2	6330001620	RELAY	FTR-F3AA012E	T
J1	6510018920	S.CONNECTOR	B8B-PH-SM3-TB	T
J2	6510018960	S.CONNECTOR	B2B-PH-SM3-TB	T
J3	6510016430	S.CONNECTOR	53307-1491	T
J5	6510018970	S.CONNECTOR	B4B-PH-SM3-TB	T
J6	6510023090	S.CONNECTOR	20FLT-SM1-TB	T
J7	6510022020	S.CONNECTOR	14FLT-SM1-TB	T
W1	8900009850	CABLE	OPC-969	T
W2	8900010210	CABLE	OPC-1026	T
EP1	0910056612	PCB	B 6036B	
EP2	9030602001	TUBE	IRRAX 1 (d) L=10 mm	

CTRL BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
IC1	1130005640	S.IC	TC4W53F (TE12L)	T
D4	1730002360	S.ZENER	MA8062-M (TX)	T
R1	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R2	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
R3	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	T
R4	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	T
R5	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	T
R6	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	T
C7	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C9	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C10	4510005600	S.ELECTROLYTIC	ECEV1CS100SR	T
C11	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C12	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C13	4030017490	S.CERAMIC	C1608 JB 1A 105K-T	T
C14	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
C15	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	T
J1	6510022440	CONNECTOR	LTW-8MP-C <LIA>	B
J2	6510023090	S.CONNECTOR	20FLT-SM1-TB	T
W1	8900012710	CABLE	OPC-1297 (N=20,L=60)	T
EP1	0910056671	PCB	B 6042A	

S.=Surface mount

(2) FM-3001
MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R1	7010007640	RESISTOR	FRD25 T2-123J (12 kΩ)	T
R2	7010007630	RESISTOR	FRD25 T2-682J (6.8 kΩ)	T
R3	7010007650	RESISTOR	FRD25 T2-153J (15 kΩ)	T
R4	7010007660	RESISTOR	FRD25 T2-333J (33 kΩ)	T
R5	7010001150	RESISTOR	MOS2W-150-J	T
C1	4030018550	S.CERAMIC	C1608 JB 1H 223K-T	T
C2	4030017280	S.CERAMIC	C1608 JB 1H 471J-T	T
J1	6510022450	CONNECTOR	S07B-EH-S	T
MC1	7700002500	MICROPHONE	KUC3523-040245	T
S1	2660002330	SWITCH	SKHHLP014A	T
S2	2660002340	SWITCH	SKHHAM024A	B
S3	2660002340	SWITCH	SKHHAM024A	B
S4	2660002340	SWITCH	SKHHAM024A	B
SP1	2510001092	SPEAKER	036D0801B	T
EP1	0910052553	PCB	B 5431C	

(3) FM-3010 (OPTIONAL MICROPHONE)
MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
IC1	1140011720	S.IC	μPD789405AGK-B03-9EU (FX-2697C)	B
IC2	1110001810	S.IC	TA7368F (ER)	B
IC3	1110004490	S.IC	M62429FP 700C	B
IC4	1120002830	S.IC	NJM2125F-TE1	B
IC5	1180000420	S.IC	TA78L05F (TE12R)	B
IC6	1180001250	S.IC	TA7808F (TE16L)	B
IC7	1110005730	S.IC	S-80928CNMC-G8Y-T2	B
IC8	1130007420	S.IC	TC7W14FU (TE12L)	B
IC9	1130006220	S.IC	TC4W53FU (TE12L)	B
Q1	1560000810	S.FET	2SK1069-4-TL	B
Q2	1520000460	S.TRANSISTOR	2SB1132 T100 R	B
Q3	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
Q4	1590001390	S.FET	2SJ144-Y (TE85R)	B
Q5	1590000430	S.TRANSISTOR	DTC144EUA T106	B
Q6	1590000980	S.TRANSISTOR	DTB123EK T146	B
Q9	1560000810	S.FET	2SK1069-4-TL	B
Q10	1530002060	S.TRANSISTOR	2SC4081 T106 R	B
Q11	1510000510	S.TRANSISTOR	2SA1576A T106R	B
Q12	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)	B
D1	1750000130	S.DIODE	DA204U T106	B
D2	1160000060	S.DIODE	DAN202U T106	B
D3	1750000550	S.DIODE	1SS355 TE-17	B
X1	6060000750	S.CERAMIC	CSTCC4M91G53-R0 (CSTCC4.91M)	B
R1	7030000270	S.RESISTOR	MCR10EZHJ 120 Ω (121)	B
R2	7030000270	S.RESISTOR	MCR10EZHJ 120 Ω (121)	B
R3	7030000280	S.RESISTOR	MCR10EZHJ 150 Ω (151)	B
R6	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R7	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R8	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R9	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R10	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R11	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R12	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R13	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R14	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R15	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R16	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R17	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R18	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R19	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R20	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)	B
R21	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	B
R22	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R23	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R24	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)	B
R25	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R26	7510001670	S.THERMISTOR	NTCG16 4BH 103KT	B
R27	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R28	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R30	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)	B
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R32	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)	B
R33	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R34	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R35	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R36	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R37	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)	B
R38	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B
R39	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R40	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	B
R41	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R42	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)	T
R43	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)	T
R44	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R45	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R46	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)	B
R47	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)	B
R50	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R51	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)	B
R52	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	B
R53	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)	B
R54	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R55	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R56	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)	B
R57	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)	B
R58	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)	B
R59	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)	B

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
R60	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R61	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)	B
R62	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)	B
R63	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)	B
R64	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)	B
R65	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R66	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R67	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)	B
R68	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R69	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)	B
R70	7030003260	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)	B
R75	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)	B
R76	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)	B
R77	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)	B
C1	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	B
C3	4510005430	S.ELECTROLYTIC	ECEV0JA220SR	B
C4	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C5	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C6	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C7	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C9	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C10	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C11	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C12	4030012600	S.CERAMIC	C2012 JB 1A 105M-T	B
C13	4030008920	S.CERAMIC	C1608 JB 1H 473K-T	B
C14	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C15	4510006220	S.ELECTROLYTIC	ECEV1CA101UP	B
C16	4510006220	S.ELECTROLYTIC	ECEV1CA101UP	B
C17	4510006220	S.ELECTROLYTIC	ECEV1CA101UP	B
C18	4510006250	S.ELECTROLYTIC	ECEV1CA331UP	B
C22	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C23	4510005430	S.ELECTROLYTIC	ECEV0JA220SR	B
C24	4030012600	S.CERAMIC	C2012 JB 1A 105M-T	B
C25	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C26	4030012600	S.CERAMIC	C2012 JB 1A 105M-T	B
C27	4030006850	S.CERAMIC	C1608 JB 1H 471K-T	B
C28	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C29	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C30	4510004630	S.ELECTROLYTIC	ECEV1CA100SR	B
C31	4030011810	S.CERAMIC	C1608 JB 1A 224K-T	B
C32	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C33	4030012600	S.CERAMIC	C2012 JB 1A 105M-T	B
C34	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C35	4510005430	S.ELECTROLYTIC	ECEV0JA220SR	B
C36	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C37	4510005430	S.ELECTROLYTIC	ECEV0JA220SR	B
C38	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C39	4510006220	S.ELECTROLYTIC	ECEV1CA101UP	B
C40	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C41	4510006250	S.ELECTROLYTIC	ECEV1CA331UP	B
C42	4030008890	S.CERAMIC	C1608 JB 1H 273K-T	B
C44	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C45	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C46	4030011600	S.CERAMIC	C1608 JB 1E 104K-T	B
C47	4030006850	S.CERAMIC	C1608 JB 1H 471K-T	B
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T	B
C51	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C52	4030007090	S.CERAMIC	C1608 CH 1H 470J-T	B
C53	4030006900	S.CERAMIC	C1608 JB 1H 103K-T	B
C54	4030012600	S.CERAMIC	C2012 JB 1A 105M-T	B
J1	6510019420	S.CONNECTOR	B8B-ZR-SM3-TF	B
DS1	5030001900	LCD	A0119 LCD36*28.5	T
DS2	5040002660	S.LED	FY1101F-TR (LED)	T
DS3	5040002660	S.LED	FY1101F-TR (LED)	T
DS4	5040002310	S.LED	SML-311YTT86	T
DS5	5040002660	S.LED	FY1101F-TR (LED)	T
DS6	5040002660	S.LED	FY1101F-TR (LED)	T
DS7	5040002310	S.LED	SML-311YTT86	T
DS8	5040002310	S.LED	SML-311YTT86	T
DS9	5040002310	S.LED	SML-311YTT86	T
DS10	5040002310	S.LED	SML-311YTT86	T
MC1	7700002480	MICROPHONE	SKB-2746 LPC	T
S1	2260002710	S.SWITCH	SKQLLCE012	B
S2	2260002710	S.SWITCH	SKQLLCE012	B
S3	2260002710	S.SWITCH	SKQLLCE012	B
S4	2260002710	S.SWITCH	SKQLLCE012	B

MAIN BOARD

REF NO.	ORDER NO.	DESCRIPTION		M.
EP1	0910053144	PCB	B 5526D	
EP2	8930051120	LCD CONTACT	SRCN-2320-SP-N-W	T

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

7 MECHANICAL PARTS LIST

(1) FM-3000

CHASSIS

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510004880	Connector MR-DS-E 01	1
W1	8900012350	Cable OPC-1251	1
MP1	8210020410	2345 rear panel (B) assembly	1
MP4	8930049320	2288 vent. Sheet	1
MP5	8930052050	2345 R-packing	1
MP6	8810004540	Screw BiH M3 × 8 SUS	6
MP11	8410002400	2345 A-heatsink	1
MP12	8930034300	1542 ant seal	1
MP13	8810004540	Screw BiH M3 × 8 SUS	2
MP15	8810008660	Screw PH BT M3 × 8 NI-ZU	1
MP16	8930054760	2345 A-module plate	1
MP17	8510012971	2345 module cover-1	1
MP18	8930053860	2345 module plate	1
MP19	8810008660	Screw PH BT M3 × 8 NI-ZU	2
MP21	8810008660	Screw PH BT M3 × 8 NI-ZU	2
MP22	8930052440	2345 B-IC clip	1
MP23	8810008660	Screw PH BT M3 × 8 NI-ZU	5
MP31	8110007180	2345 shield cover	1
MP32	8010004340	Edging rubber	1
MP34	8810008660	Screw PH BT M3 × 8 NI-ZU	4
MP41	8930052060	2345 F-packing	1
MP42	8820001210	2438 screw	6
MP43	8930052290	O ring	6
MP45	8930055040	2438 cap	1

FRONT UNIT

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MC1	0800007300	Microphone FM-3001	1
MP1	8210020400	2697 front panel assembly	1
MP6	8110008110	Distress cover	1
MP7	8930061670	Distress shaft	1
MP8	8930061660	Distress holder	1
MP9	8930061650	Distress spring1	1
MP21	8930052280	O ring (AC)	3
MP22	8930051970	2345 A-bush plate	1
MP23	8930053030	2345 earth plate	1
MP25	8810008660	Screw PH BT M3 × 8 NI-ZU	5
MP31	8610011590	Knob N315	2
MP32	8610011580	Knob N314	1
MP33	8610007510	Knob spring No.7800	3

LOGIC BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
S1	2230000250	Switch SPPH22014A	1
DS1	5030001880	LCD TSD0393-UFFDCW	1
EP2	8930052590	LCD contact SRCN-2345-SP-N-W	2
MP1	8210016830	2345 reflector	1
MP2	8930052000	2345 LCD holder	1
MP3	8930052630	2345 LCD filter	1

Screw abbreviations BT, A: Self-tapping
BiH: Binding head PH: Pan head
NI-ZU: Nickel-Zinc SUS: Stainless

SQL BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
R1	7210002360	Variable resistor TP96N97-15F-10KB-1301	1

DIAL BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
S1	2250000220	Switch TP90N937E20-15F-1540	1

VOL BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
R1	7210003080	Variable resistor TP96N97-15F-10KA-2345	1

MAIN BOARD

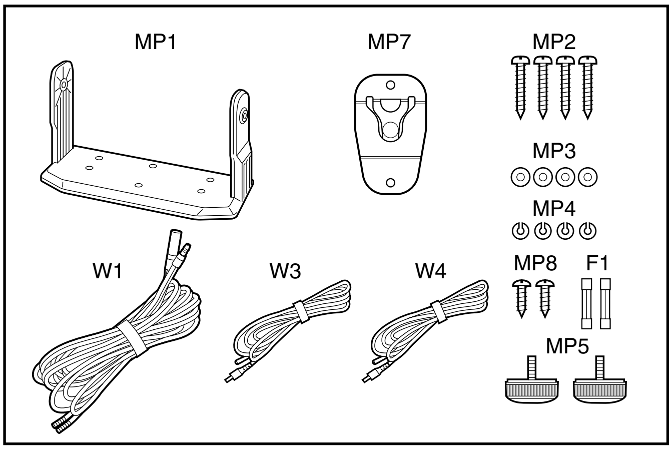
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8510013150	2345 VCO case	1
MP4	8930005320	Filter spacer	2
MP6	8930054750	2345 A-earth plate	1

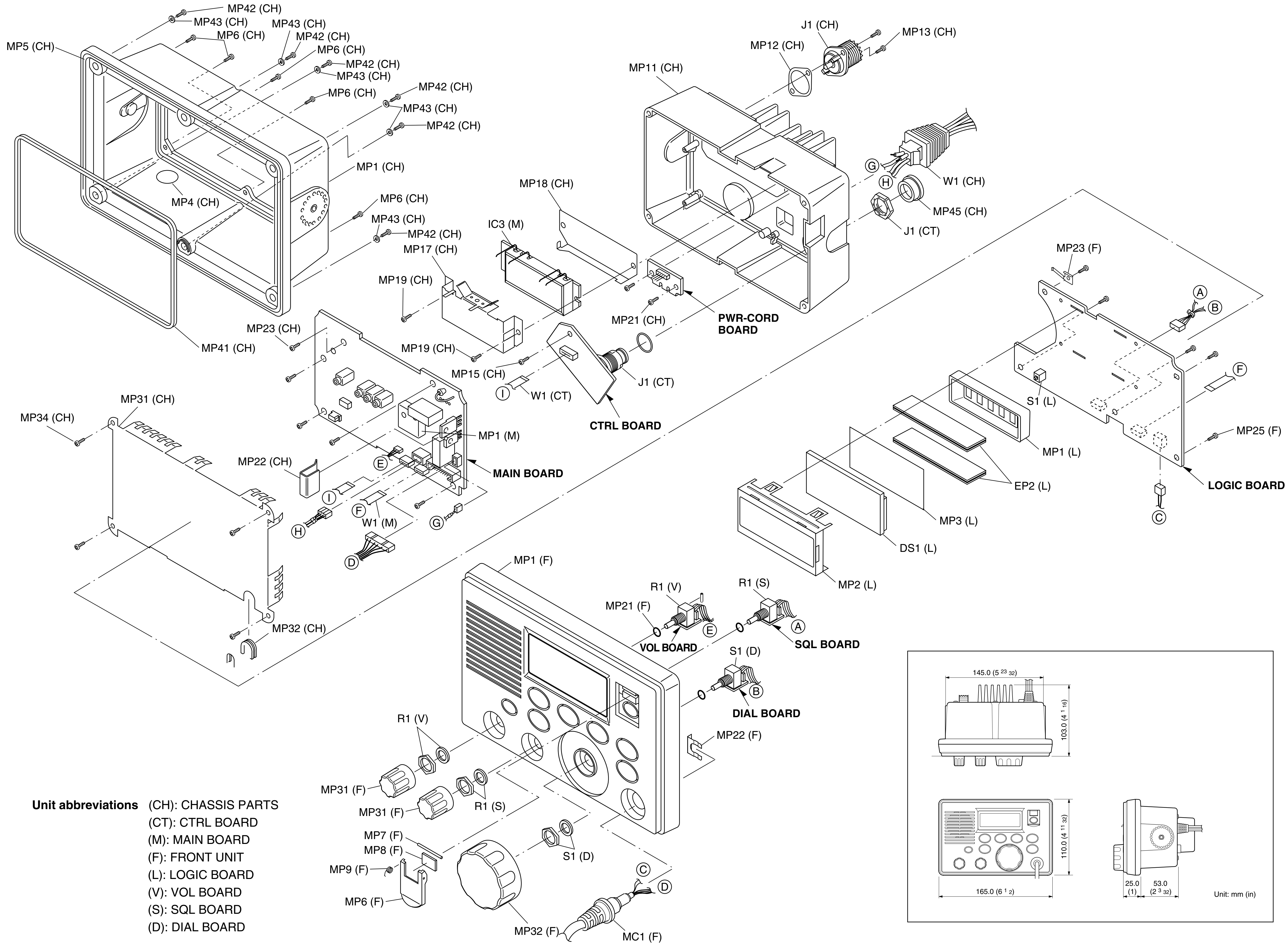
CTRL BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1	6510022440	Connector LTW-8MP-C	1
W1	8900012710	Cable OPC-1297	1

ACCESSORIES

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
F1	5210000070	Fuse FGB 10A	2
W1	8900012590	Cable FM-3003	1
W3	8900012420	RCA connector cable [RED]	1
W4	8900012430	RCA connector cable [WHITE]	1
MP1	8010019394	2345 mobile bracket(B)-4	1
MP2	8810001490	Screw PH A M5 × 20 SUS	4
MP3	8850000180	Flat washer M5 SUS	4
MP4	8850000500	Spring washer M5 SUS	4
MP5	8610011910	Knob (M5) 79-001-3297-0	2
MP7	8950005110	2289 mic hanger	1
MP8	8810004700	Screw PH A M3 × 16 SUS	2





Unit abbreviations (CH): CHASSIS PARTS
(CT): CTRL BOARD
(M): MAIN BOARD
(F): FRONT UNIT
(L): LOGIC BOARD
(V): VOL BOARD
(S): SQL BOARD
(D): DIAL BOARD

(2) FM-3001

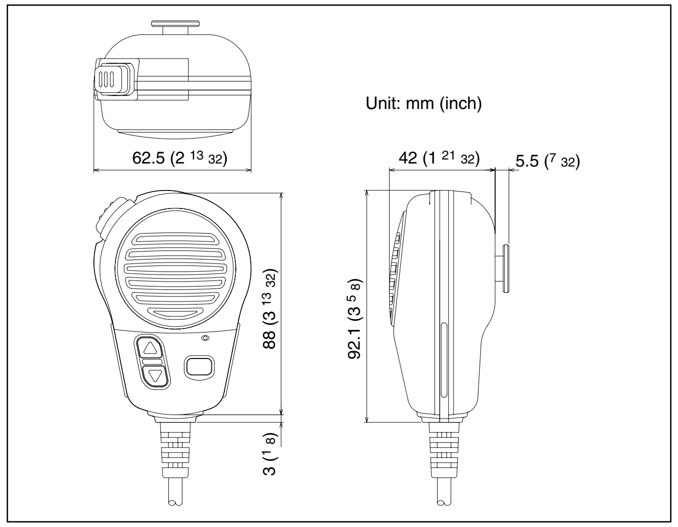
CHASSIS PARTS

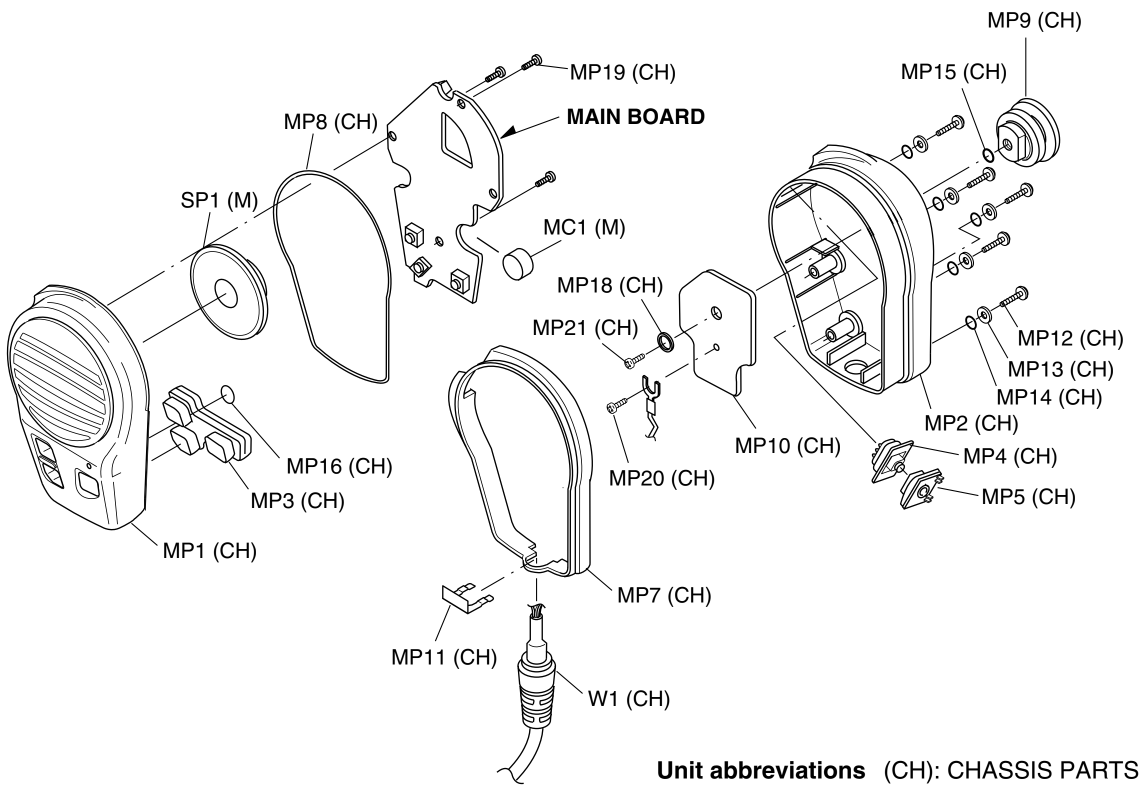
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900009770	Cable OPC-948	1
MP1	8210020311	2352 front panel (I)-1	1
MP2	8210016851	2352 rear panel-1	1
MP3	8930052160	2352 key	1
MP4	8930052150	2352 PTT rubber	1
MP5	8930052140	2352 PTT holder	1
MP7	8930052120	2352 rubber	1
MP8	8930052110	2352 main seal	1
MP9	8610010870	2352 hanger knob	1
MP10	8310048760	2352 R-plate	1
MP11	8310048780	2352 MIC plate	1
MP12	8820001150	2352 screw	5
MP13	8850001850	ICOM washer (Y)	5
MP14	8930052340	O-ring (AE)	5
MP15	8930052350	O-ring (AF)	1
MP16	8930053870	2352 sheet (A)	1
MP17	8930053040	2352 SP net	1
MP18	8850001610	Spring washer M4 SUS	1
MP19	8810009260	Screw PH BT 2 × 6 NI	3
MP20	8810008900	Screw PH M3 × 6 NI	1
MP21	8810009240	Screw M4 × 10 ZK	1

MAIN BOARD

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MC1	7700002500	Microphone KUC2123-030245	1
SP1	2510001092	Speaker S36G04K-4	1

Screw abbreviations BT: Self-Tapping, PH: Pan head, NI: Nickel, SUS: Stainless, NI-ZU: Nickel-zinc, ZK: Black





Unit abbreviations (CH): CHASSIS PARTS
(M): MAIN BOARD

(3) FM-3010 (OPTIONAL MICROPHONE)

CHASSIS PARTS

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W3	8900010220	Cable OPC-997	1
SP1	2510001090	Speaker 036D0801	1
MP1	8210020390	2417 A-front panel assembly	1
MP3	8930060750	2417 A-key board	1
MP4	8930053540	2417 PTT rubber	1
MP5	8930053990	2417 PTT sheet	1
MP6	8930053550	2417 PTT holder	1
MP7	8930060760	2417 A-top key	1
MP8	8930053760	2417 key plate	1
MP10	8930039000	1757 sheet	1
MP11	8810009180	Screw FT BT M2 × 5 NI-ZU	3
MP12	8930053750	2417 plate	1
MP13	8210020330	2417 rear panel (B)	1
MP14	8310049970	2417 R-plate	1
MP15	8610010980	2417 hanger knob	1
MP16	8930053740	O-ring (AJ)	1
MP17	8810008450	Screw M4 × 8 ZK	1
MP18	8850000490	Spring washer M4 SUS	1
MP19	8930053530	2417 rubber	1
MP20	8820001180	2417 screw 2.6 × 16	6
MP21	8930053730	O-ring (AI)	6

MAIN BOARD

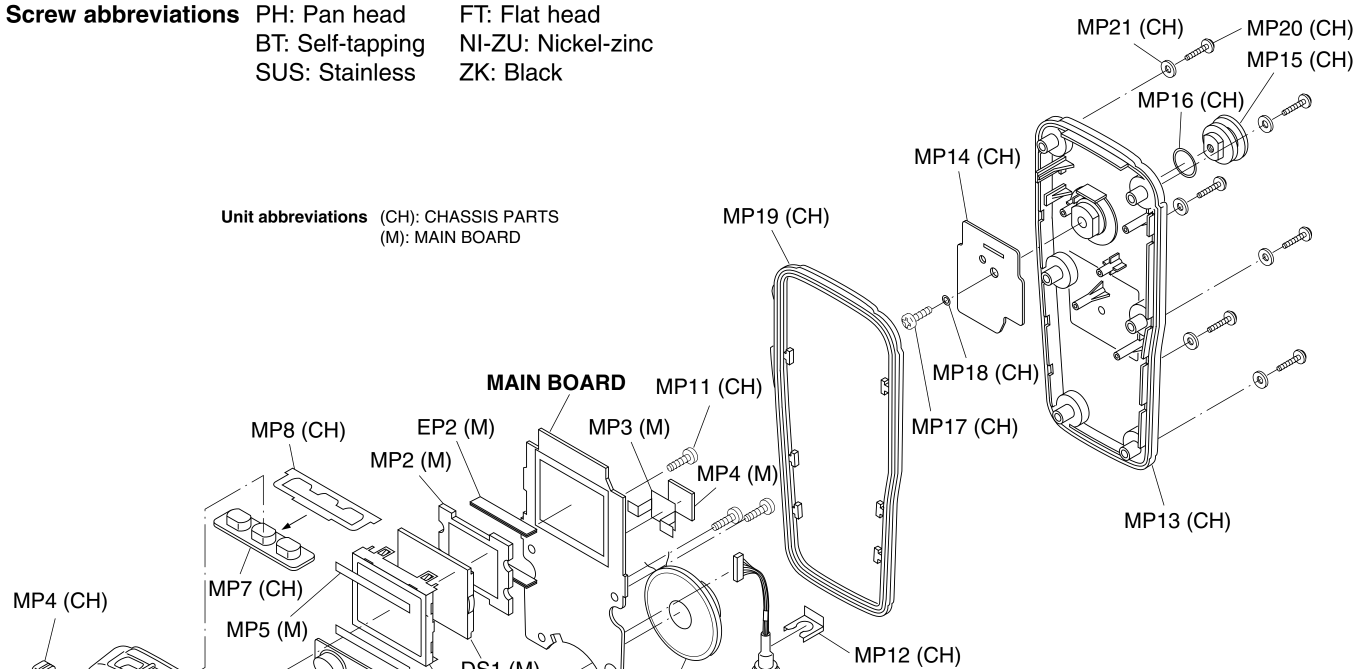
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
DS1	5030001900	LCD A0119 (LCD 36 × 28.5)	1
EP2	8930051120	LCD contact SRCN-2320-SP-N-W	2
MC1	7700002480	Microphone SKB-2746 LPC	1
MP1	8930053780	2417 LCD holder	1
MP2	8210017240	2417 reflector	1
MP3	8310050200	2417 H-plate	1
MP4	8930039612	Thermally sheet (C)-2	1
MP5	8930054890	Insulate sheet (GM)	2

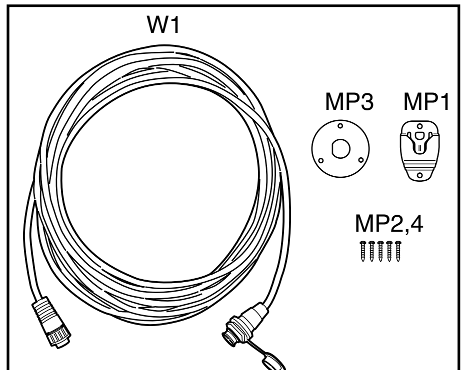
ACCESSORIES

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900012600	Cable FM-3011 (OPC-1000)	1
MP1	8950005110	2289 mic hanger	1
MP2	8810004700	Screw PH M3 × 16 SUS	2
MP3	8310050320	2417 C-plate	1
MP4	8810004700	Screw PH M3 × 16 SUS	3

Screw abbreviations PH: Pan head, FT: Flat head, BT: Self-tapping, NI-ZU: Nickel-zinc, SUS: Stainless, ZK: Black

Unit abbreviations (CH): CHASSIS PARTS
(M): MAIN BOARD

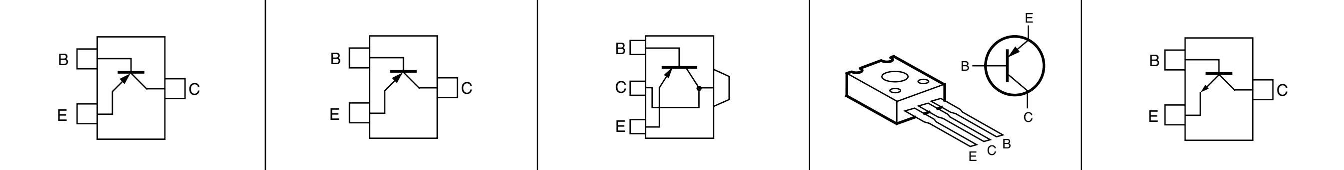




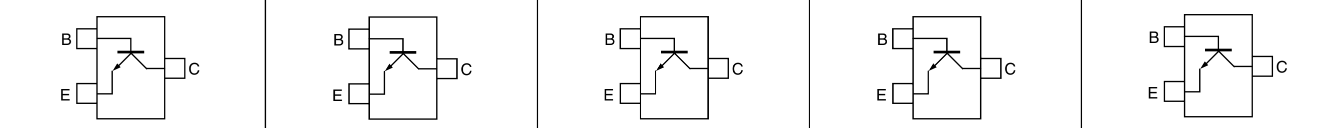
FM-3010 ACCESSORIES

• TRANSISTORS AND FET'S

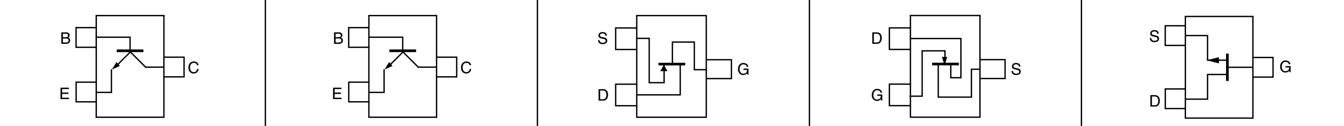
2SA1576A T106 R	2SA1577 T106 Q	2SB1132 T100 R	2SB1143 S	2SC2714 Y
(Symbol: FR)	(Symbol: HQ)	(Symbol: BAR)	(Symbol: B1143)	(Symbol: QY)



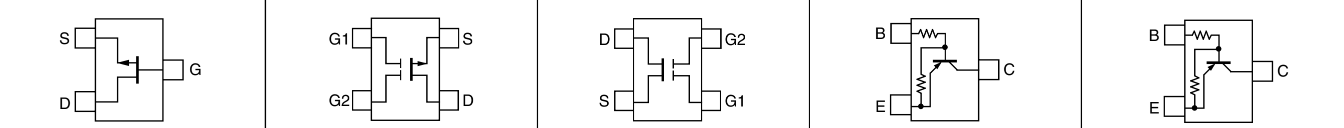
2SC3326 B	2SC3775 3 TB	2SC4081 T106 R	2SC4081 T106 S	2SC4116 BL
(Symbol: CCB)	(Symbol: OY3)	(Symbol: BR)	(Symbol: BS)	(Symbol: LL)



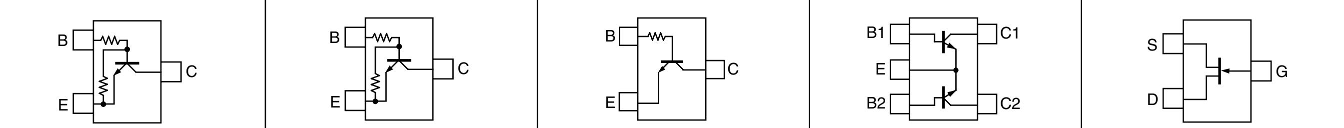
2SC4215 O	2SC4226 T1 R25	2SJ144 Y	2SK210 Y	2SK880 Y
(Symbol: QO)	(Symbol: R25)	(Symbol: VY)	(Symbol: YY)	(Symbol: XY)



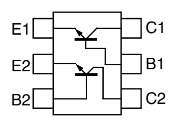
2SK1069 4 TL	3SK206 T1 U78	3SK292	DTA144EUA T106	DTB123 EK
(Symbol: FJ)	(Symbol: U78)	(Symbol: UK)	(Symbol: 16)	(Symbol: F12)



DTC114EUA T106	DTC144EUA T106	DTC144TU T106	FMW1 T148	PMBFJ310
(Symbol: 24)	(Symbol: 26_)	(Symbol: 06)	(Symbol: W1)	(Symbol: M10)

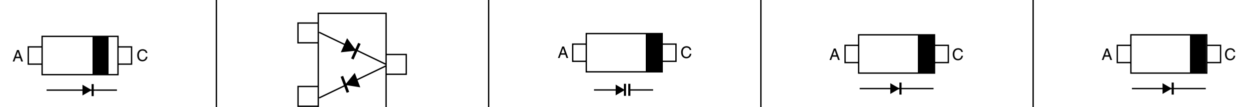


XP6501 AB				
(Symbol: 5N)				

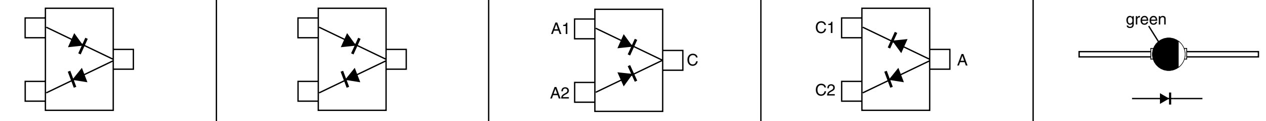


• DIODES

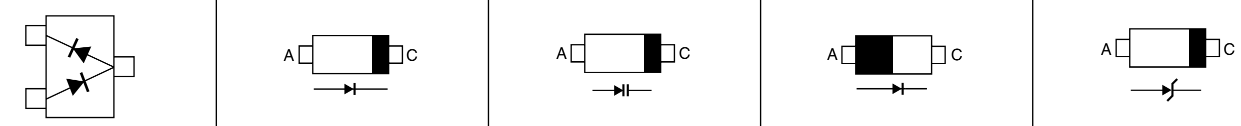
1SS355	1SS375-TL	1SV214	1SV278	1SV284
(Symbol: A)	(Symbol: FH)	(Symbol: T1)	(Symbol: T1)	(Symbol: TL)



DA204 K T146	DA204 U T106	DAN202 U	DAP202 U T106	DSA3A1
(Symbol: K)	(Symbol: K)	(Symbol: N)	(Symbol: P)	(Color: Green)



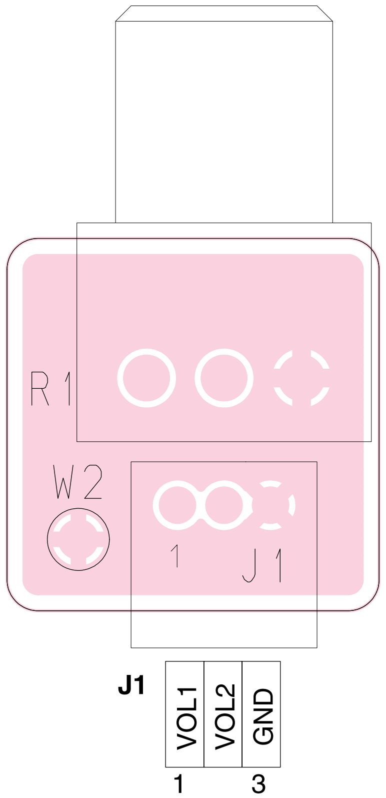
HSM88ASR TR	HSU88TRF	HVC358B	MA77	MA8036 L
(Symbol: C3)	(Symbol: 9)	(Symbol: B2)	(Symbol: 4B)	(Symbol: 3_6)



MA8043 L	MA8047 M	MA8062 M	XB15A308	
(Symbol: 4_3)	(Symbol: 4-7)	(Symbol: 6-2)	(Symbol: T8)	

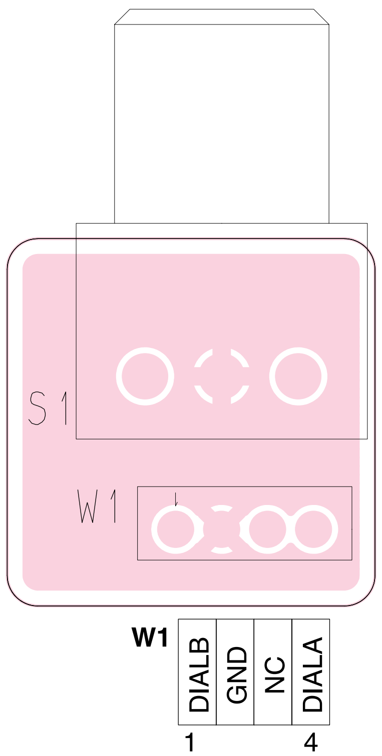


9 BOARD LAYOUTS



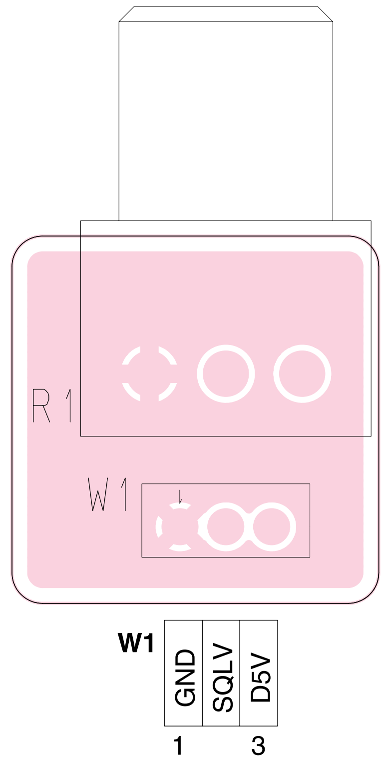
to the MAIN board W2

Fig. 9.1 VOL Board



to the LOGIC board J3

Fig. 9.2 DIAL Board



to the LOGIC board J3

Fig. 9.3 SQL Board

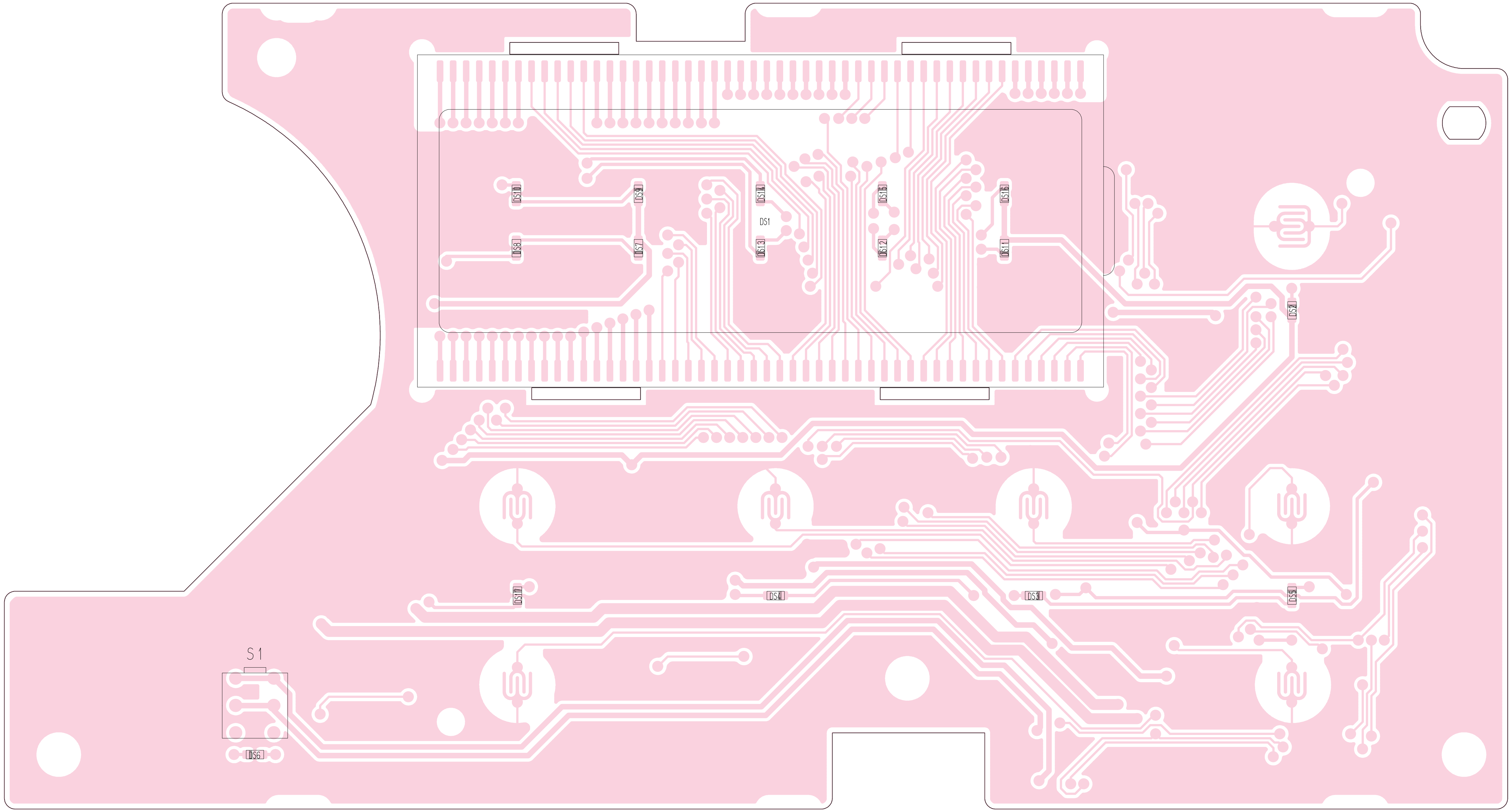


Fig. 9.4 LOGIC Board (Side A)

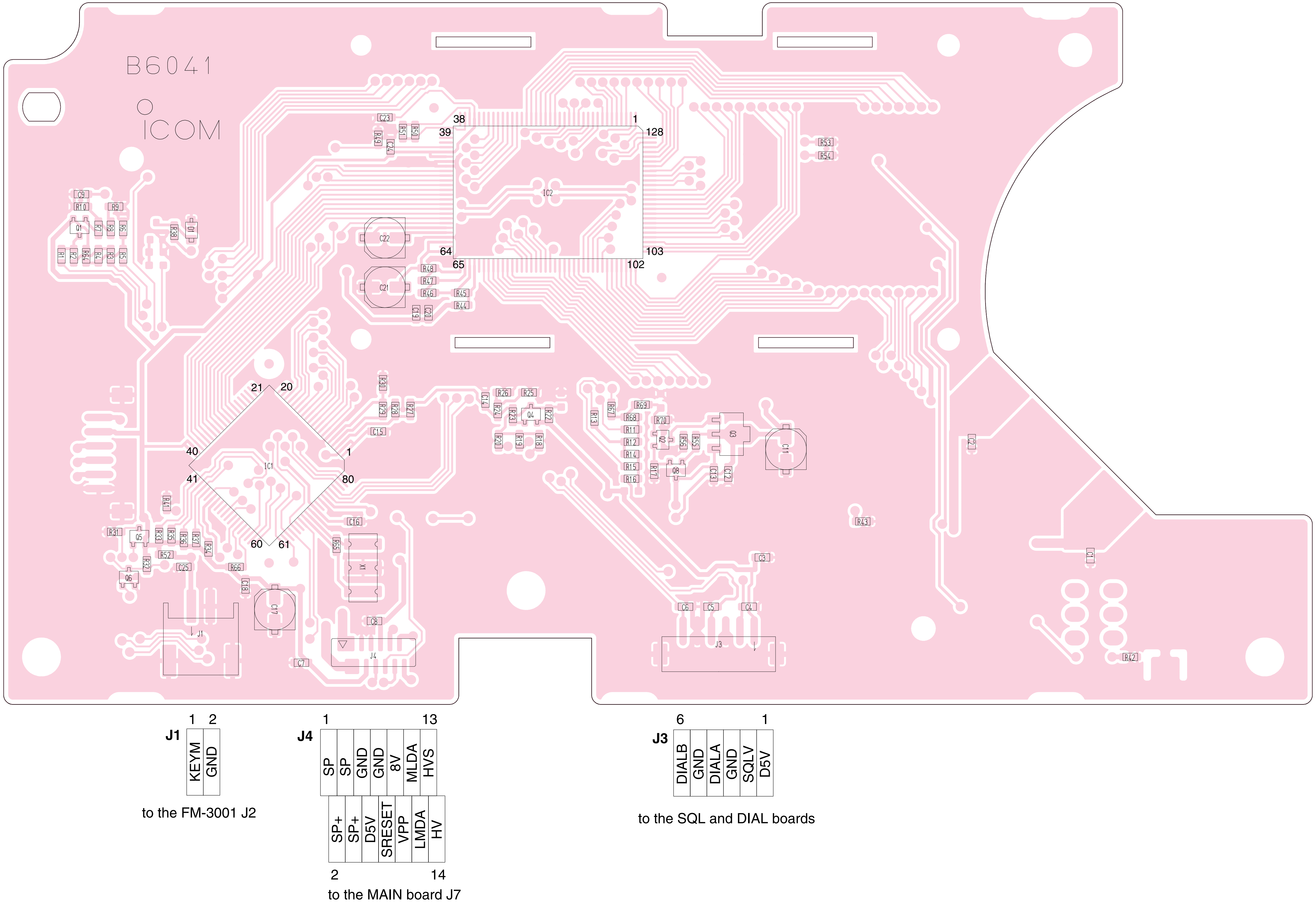


Fig. 9.5 LOGIC Board (Side B)

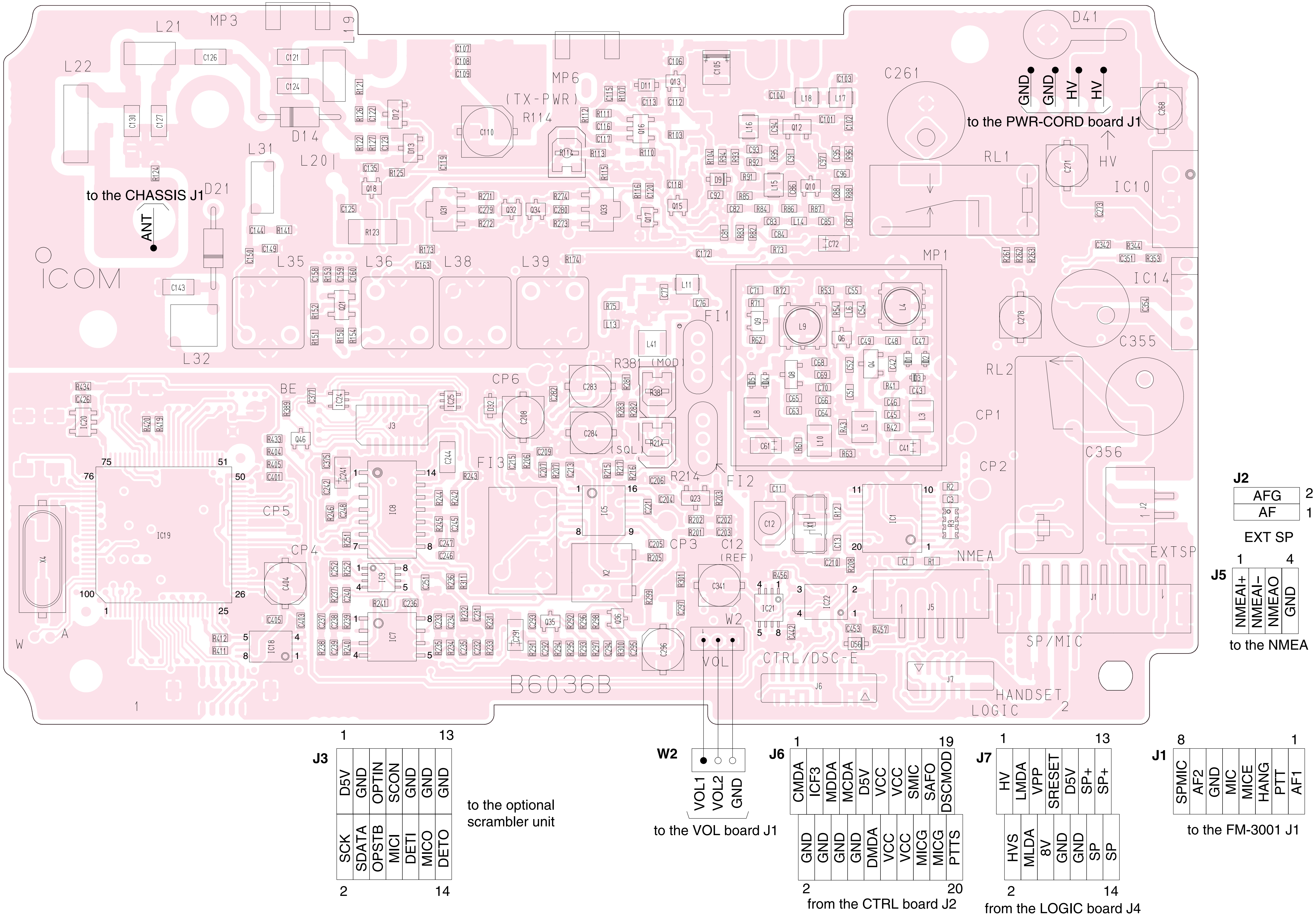


Fig. 9.6 MAIN Board (Side A)

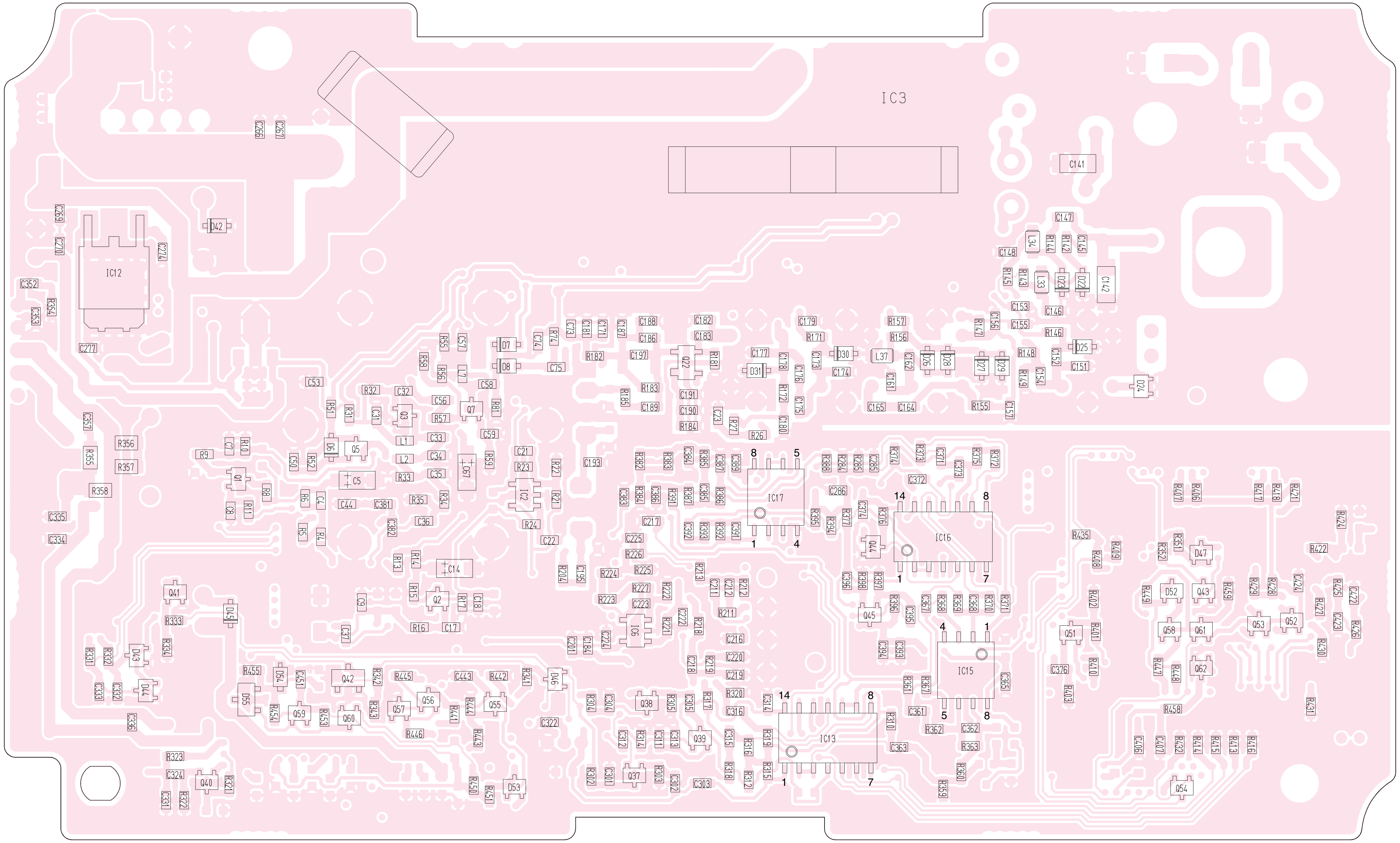
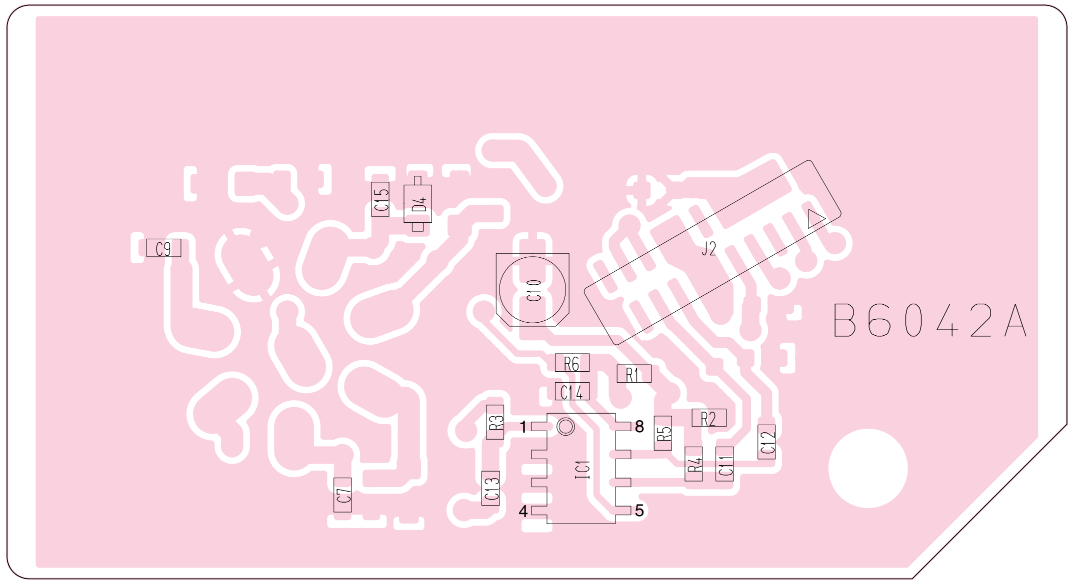


Fig. 9.7 MAIN Board (Side B)



J2

20									2
PTTS	MICG	MICG	VCC	VCC	DMDA	GND	GND	GND	GND
DSCMOD	SAFO	SMIC	VCC	VCC	D5V	MCDA	MDDA	ICF3	CMDA
19									1

to the MAIN board J6

Fig. 9.8 CTRL Board (Side A)

to the MAIN board

J1

1			4
GND	GND	HV	HV

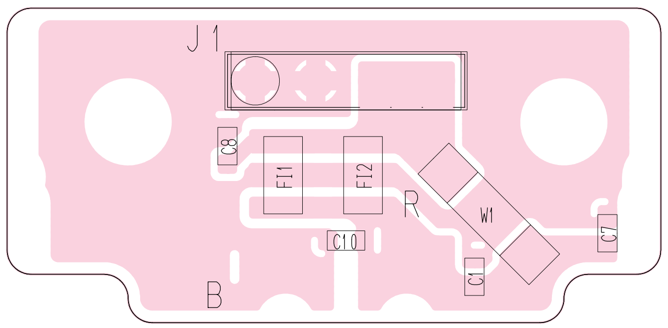
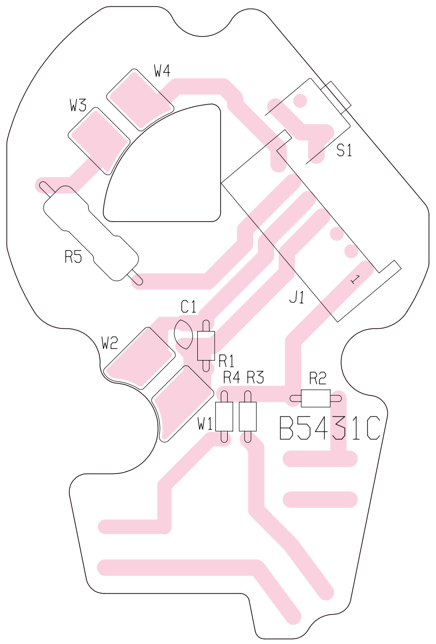


Fig. 9.9 PWR-CODE Board (Side A)



J1

Signal	Pin
GND	7
SPMIC	
MICE	
MIC	
PTT	
KGND	
KEYM	1

to the FM-3000 LOGIC board J1 and MAIN board J1

Fig. 9.10 FM-3001 Board (Side A)

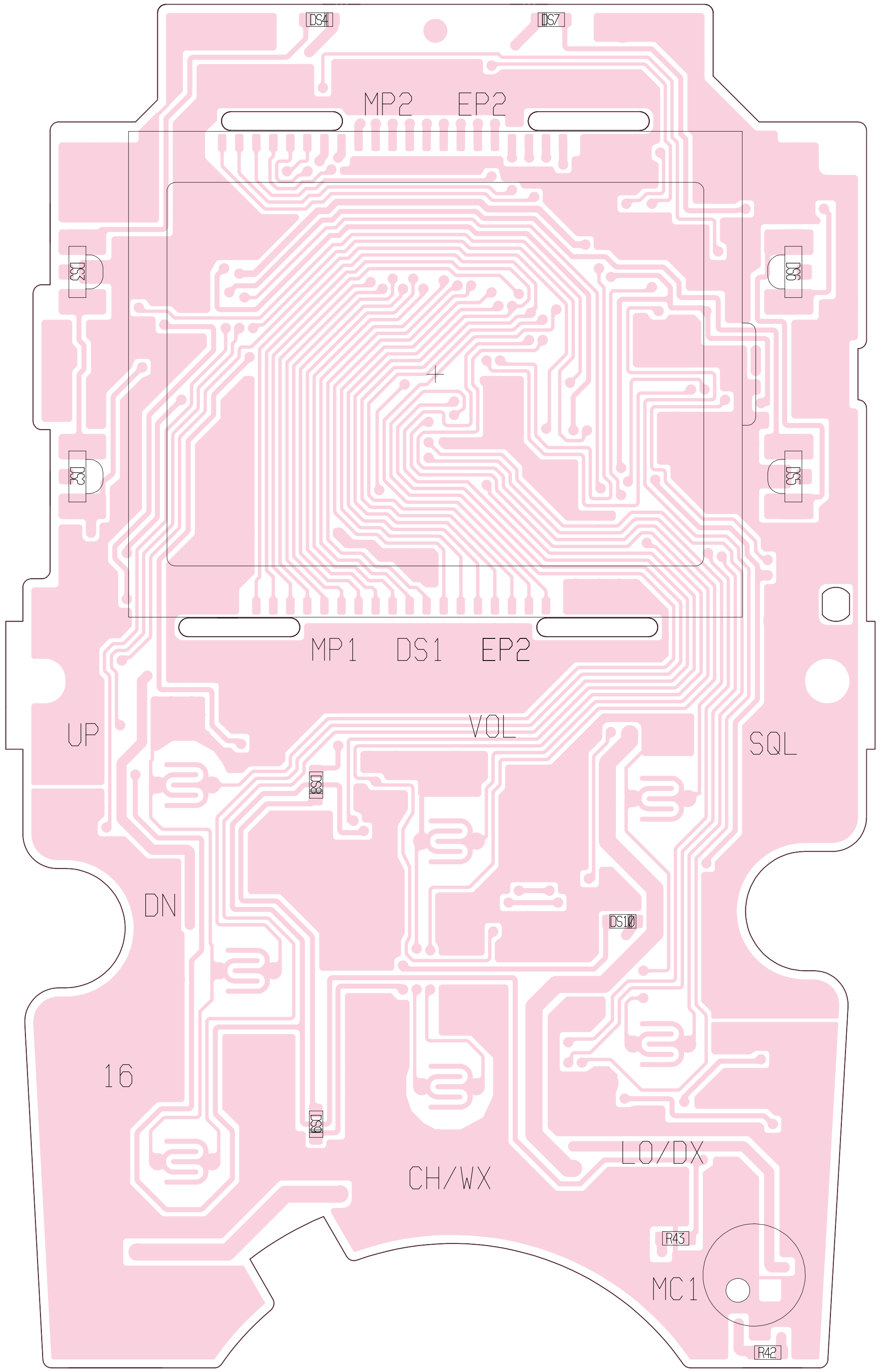


Fig. 9.11 FM-3010 Board (Side A)

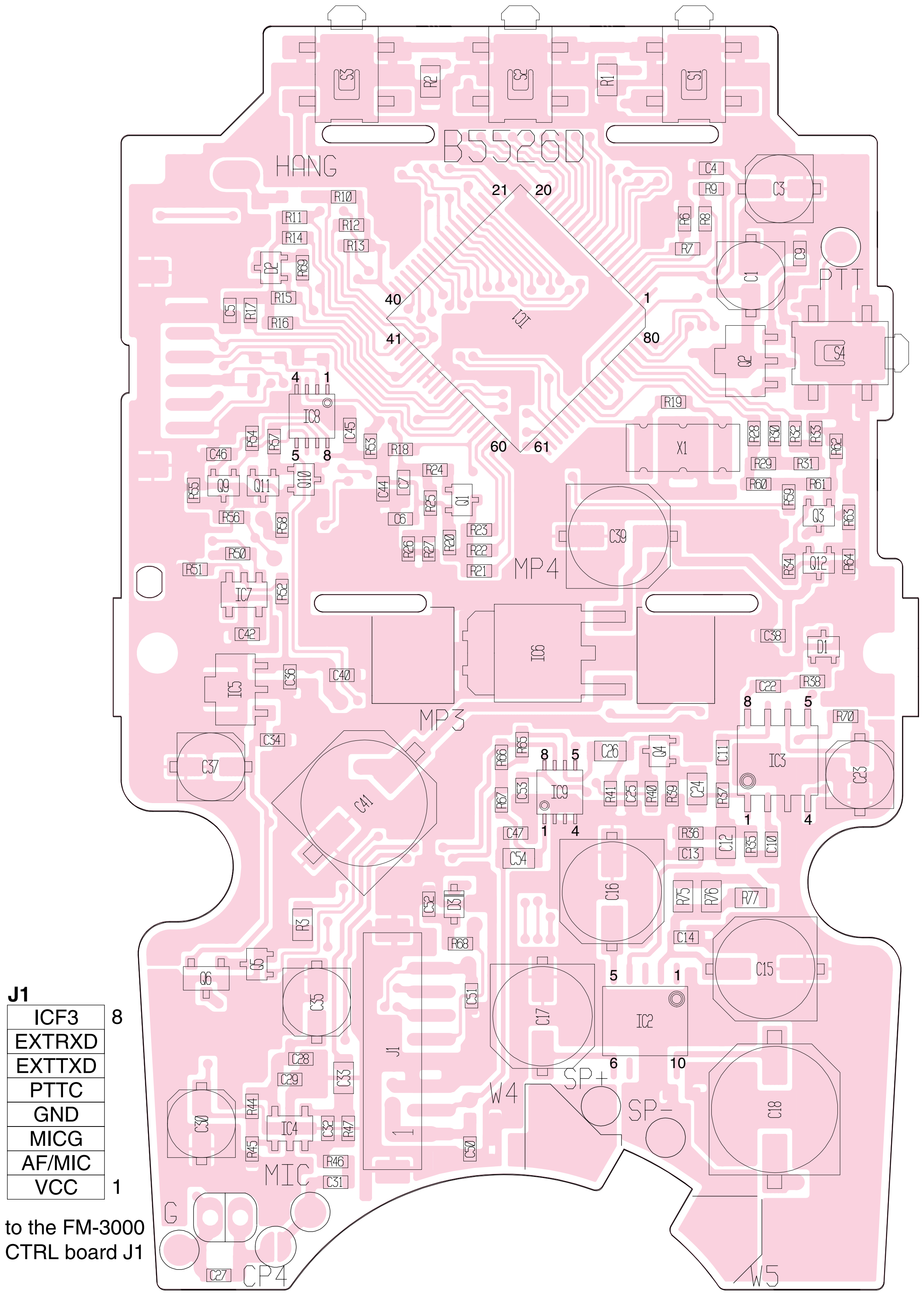


Fig. 9.12 FM-3010 Board (Side B)

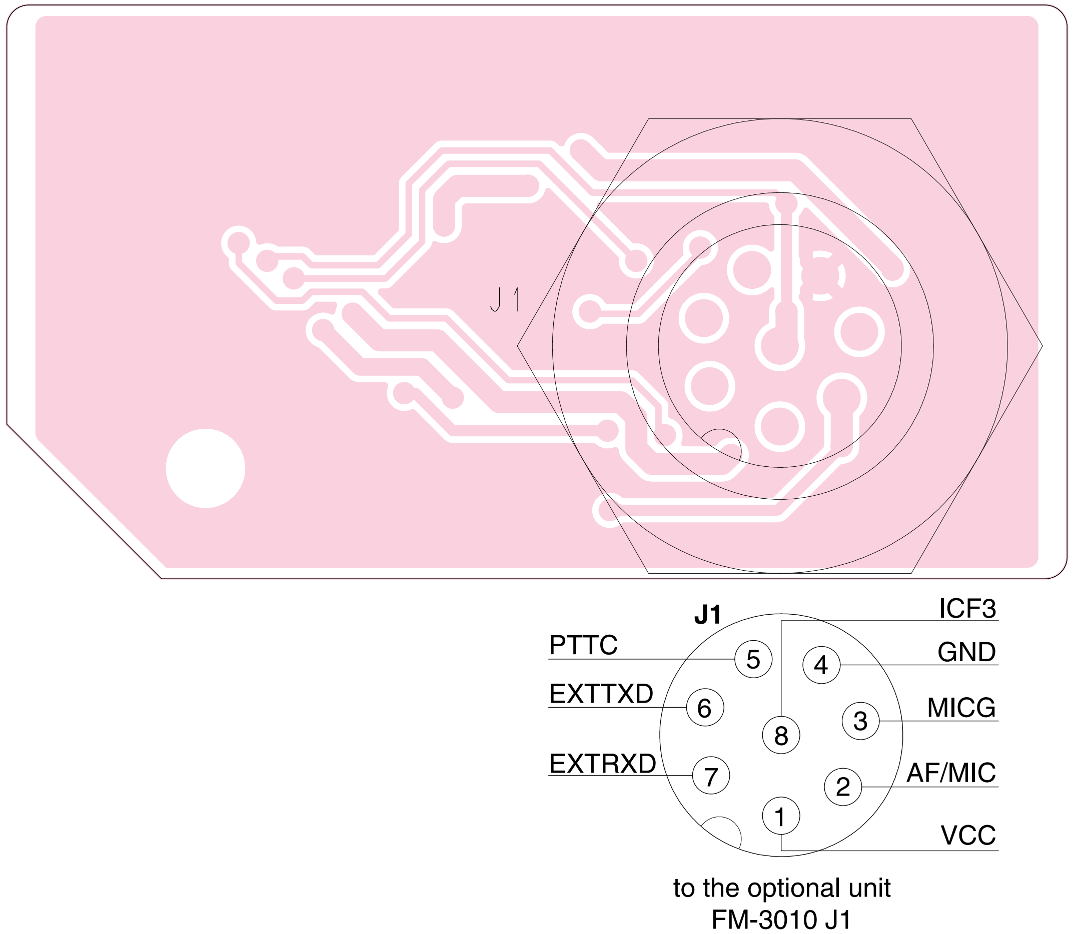


Fig. 9.13 CTRL Board (Side B)

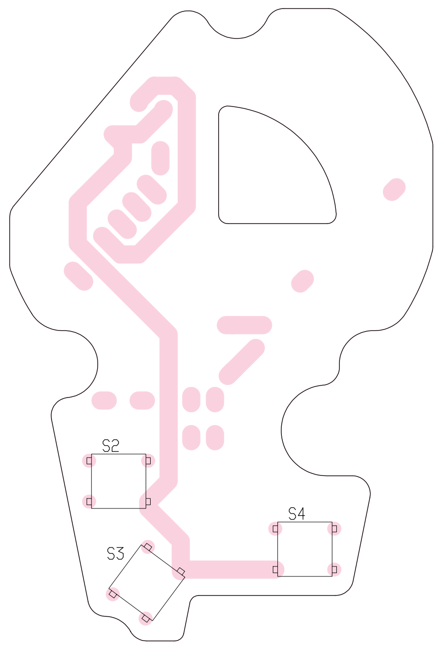


Fig. 9.14 FM-3001 Board (Side B)

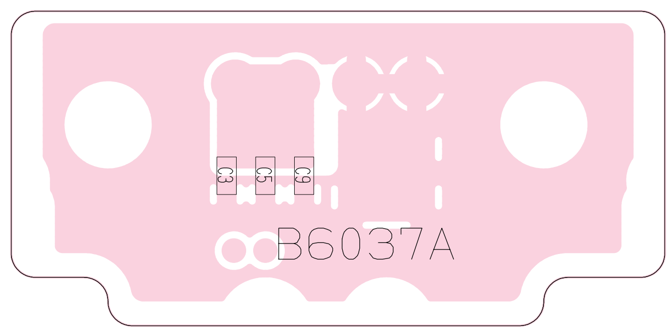
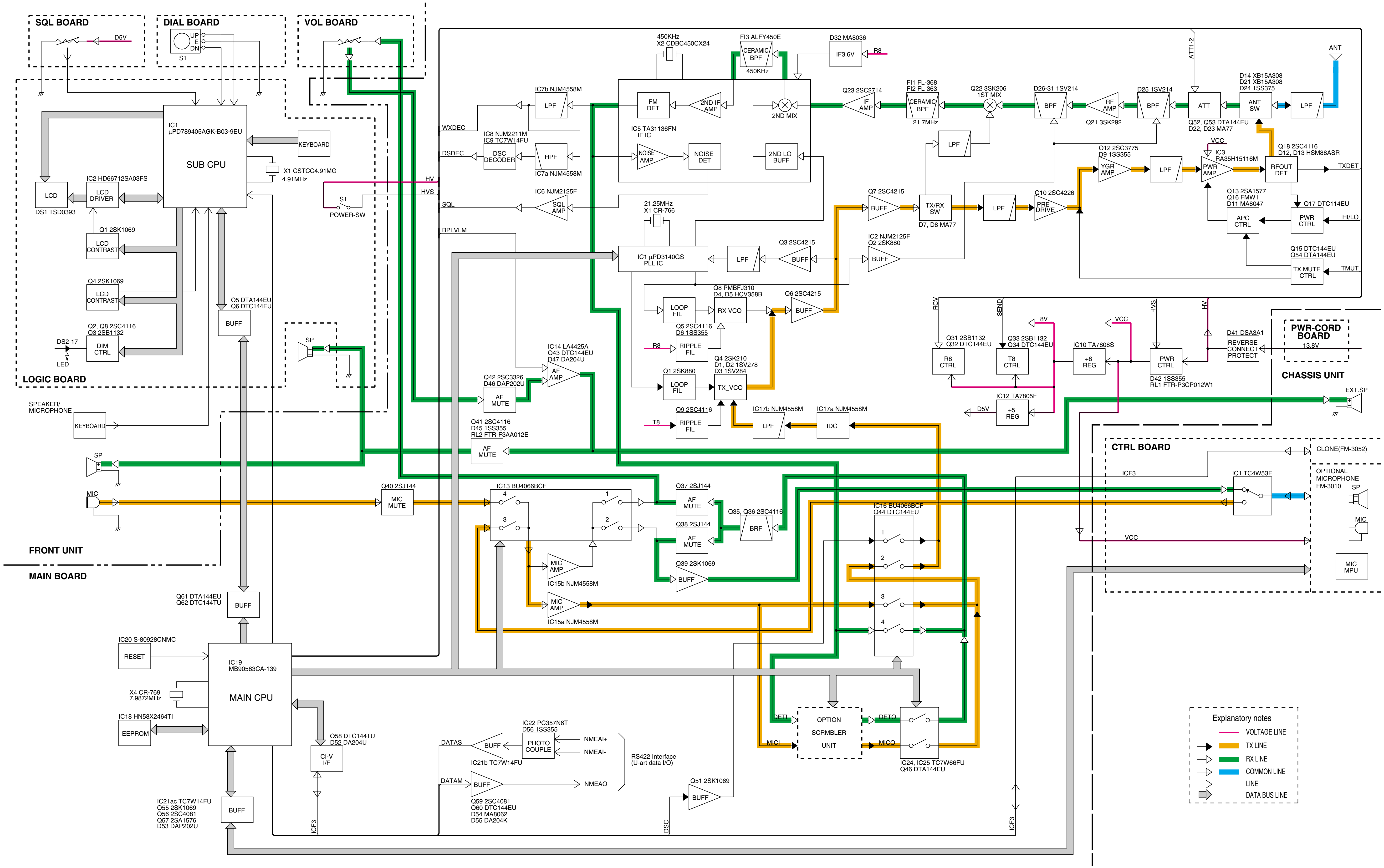


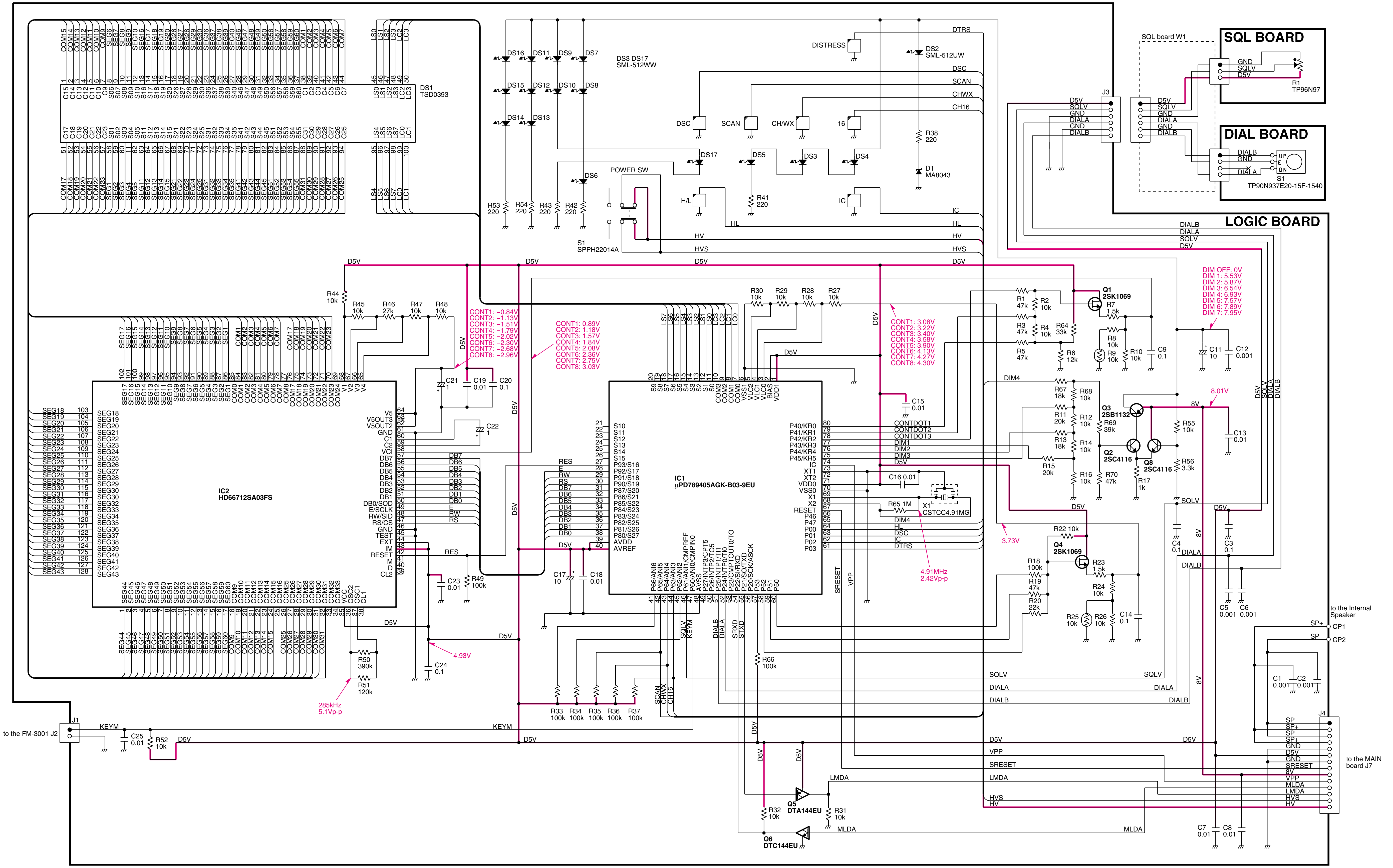
Fig. 9.15 PWR-CODE Board (Side B)

BLOCK DIAGRAM

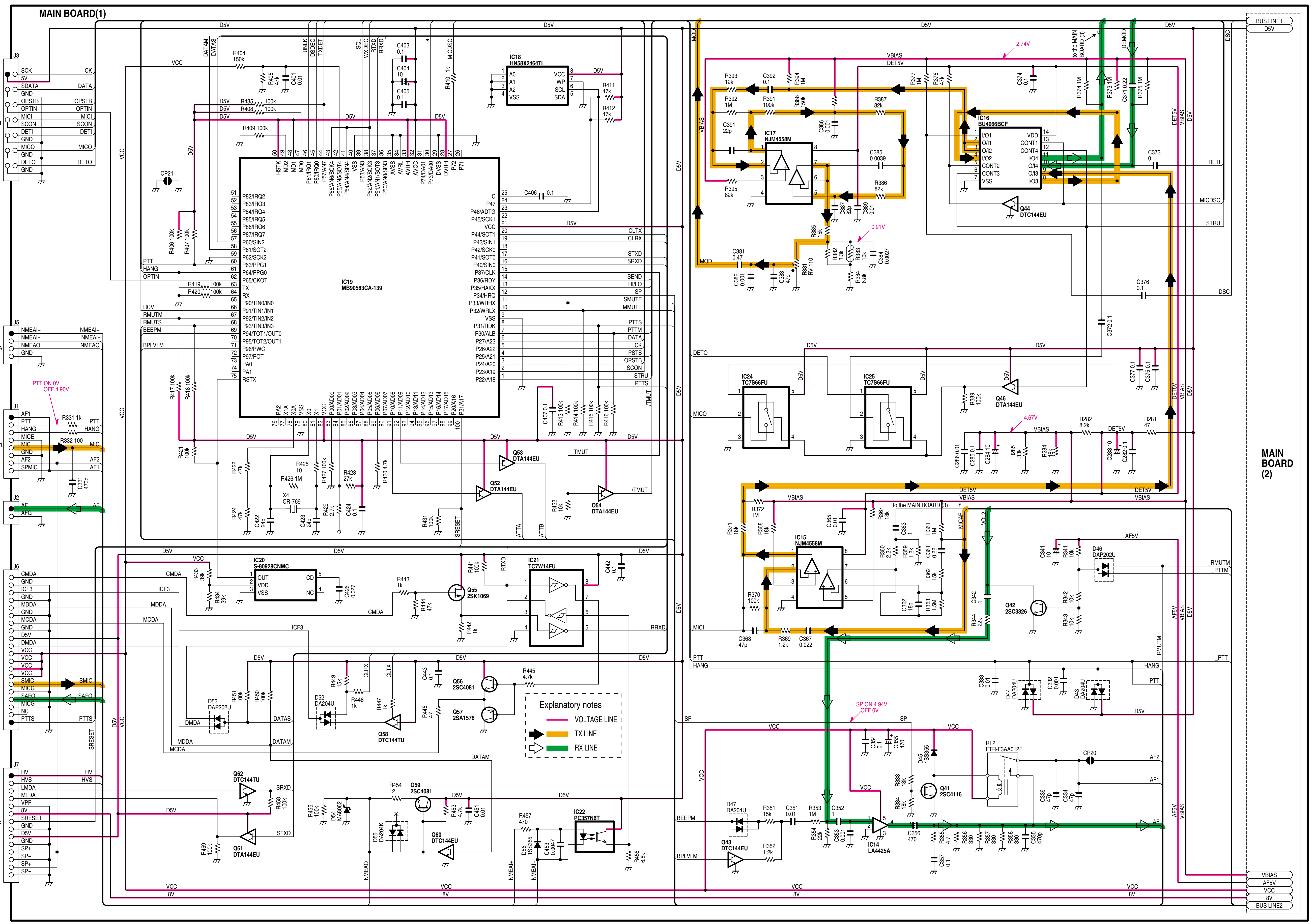


11 VOLTAGE DIAGRAM

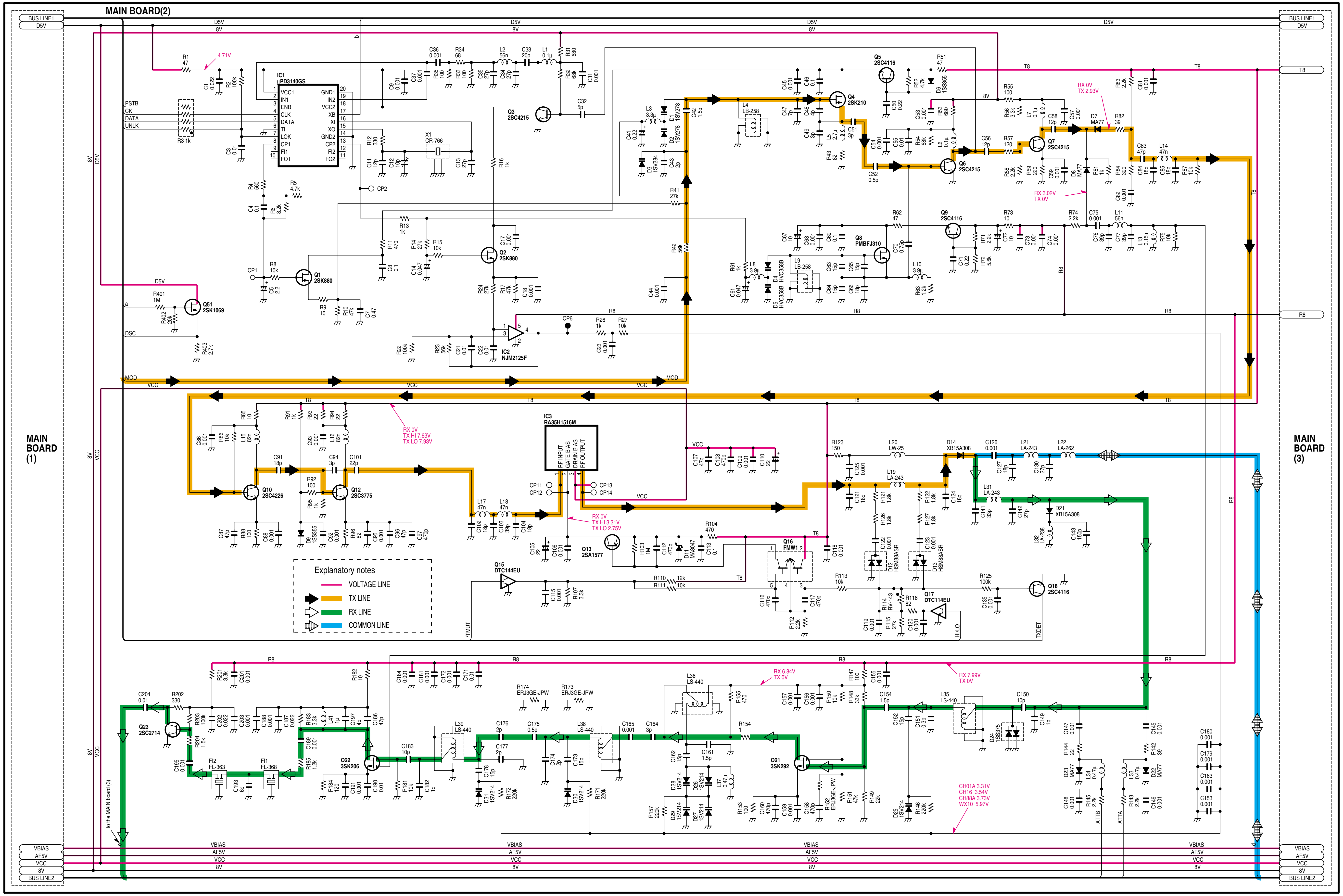
LOGIC BOARD



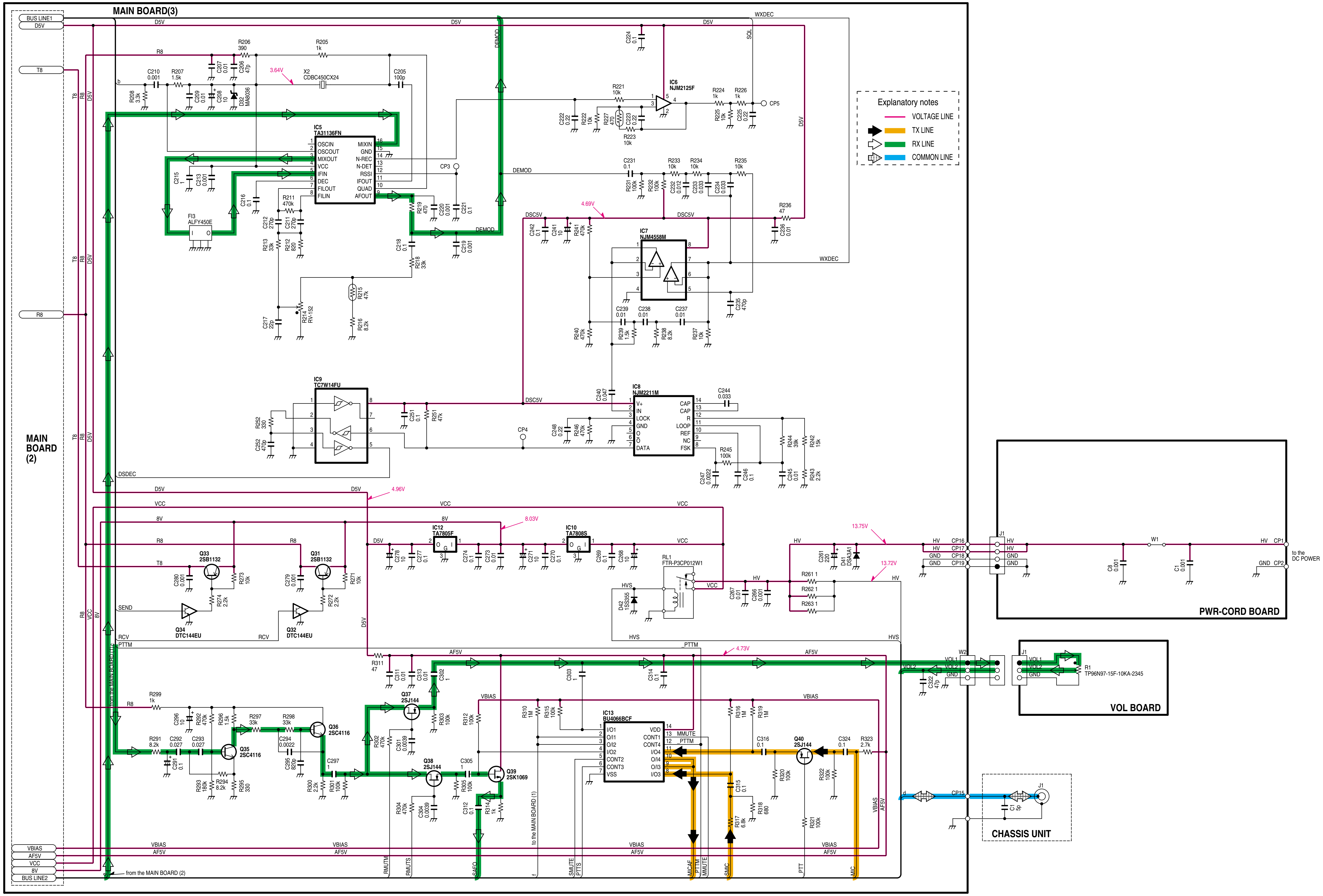
MAIN BOARD (1/3)



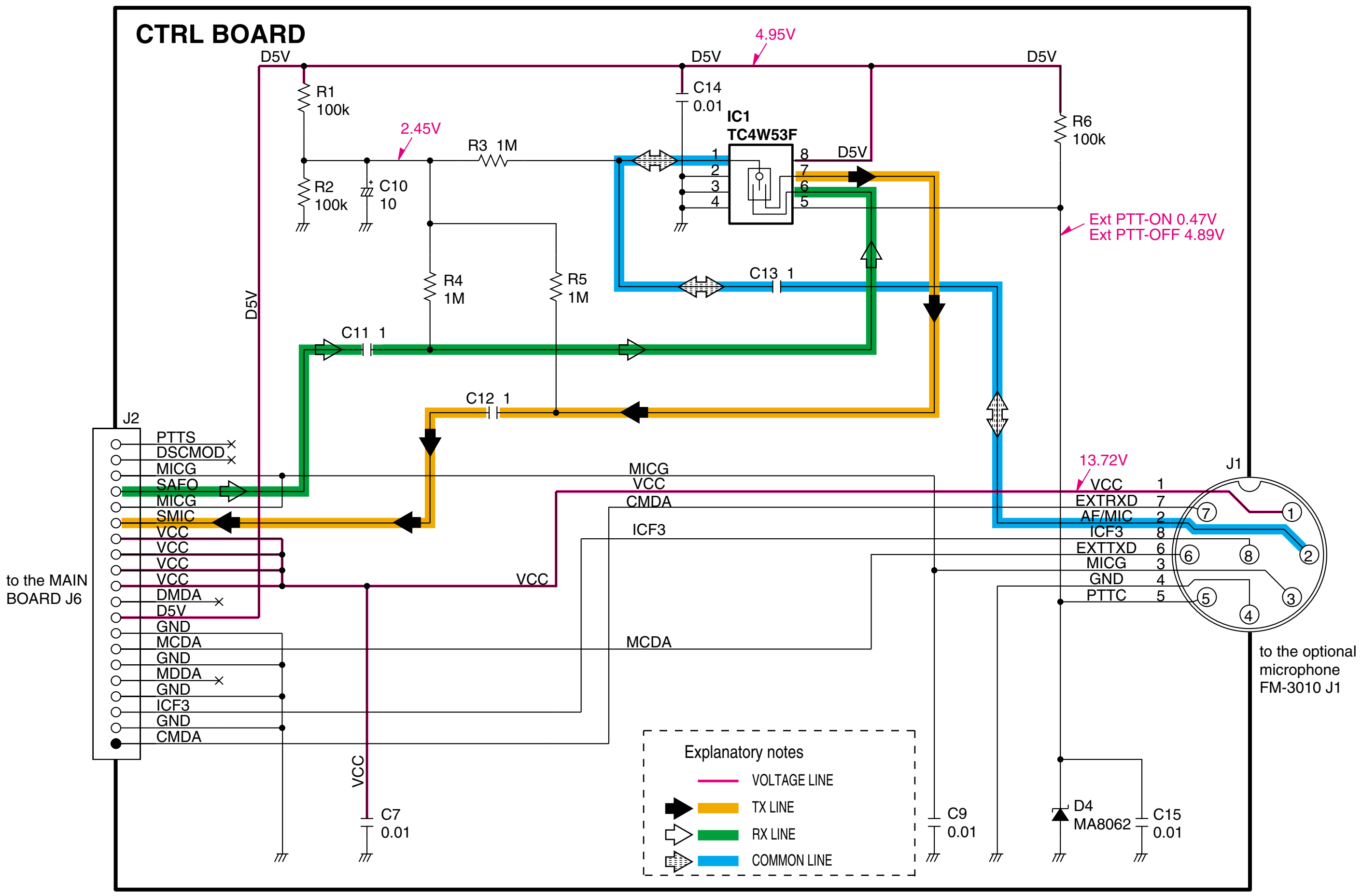
MAIN BOARD (2/3)



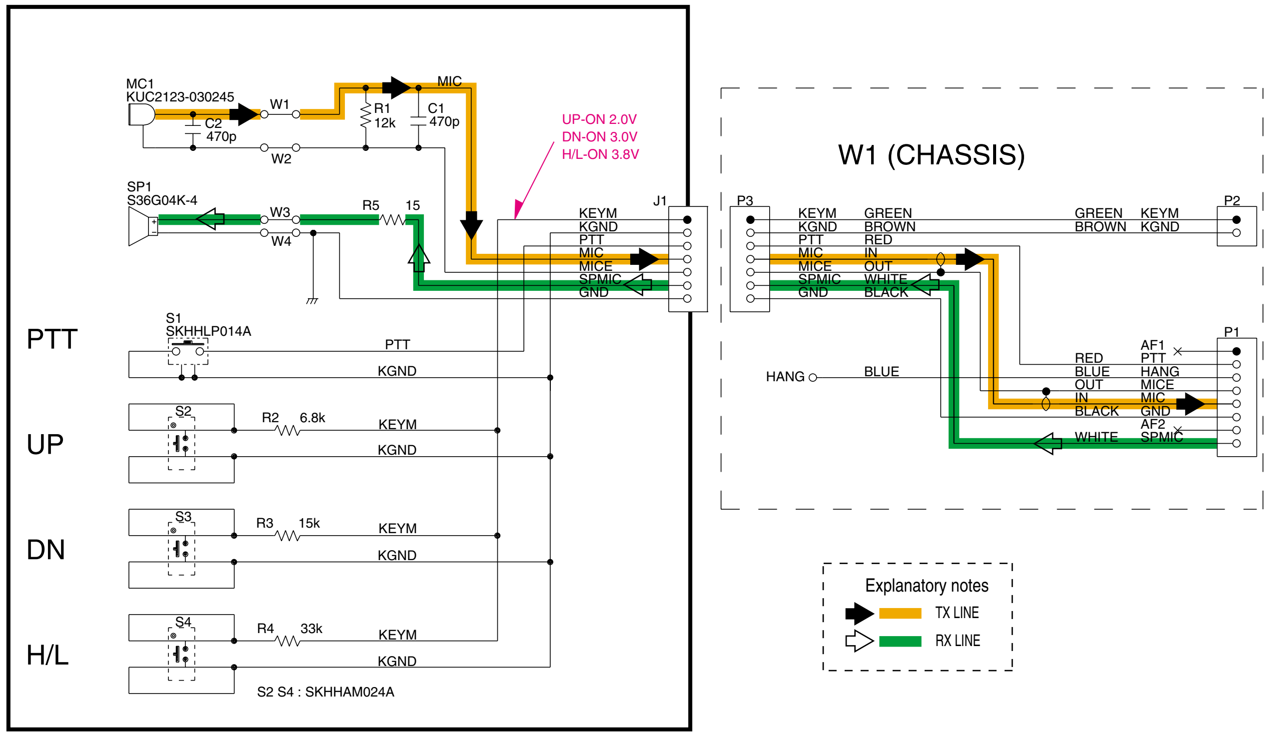
MAIN BOARD (3/3)



CTRL BOARD



FM-3001



FM-3010 (OPTIONAL MICROPHONE)

